

COMMERCIAL REFRIGERATION & AIR CONDITIONING

Q. What have
these things
in common?



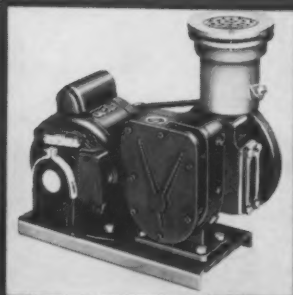
TUBE WORKING TOOLS: page 39



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A. ALL ARE VITAL IN AIR CONDITIONING AND REFRIGERATION SERVICE

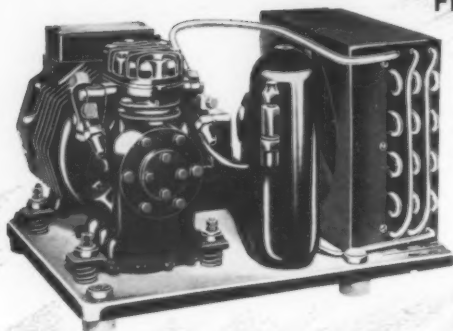
SELL



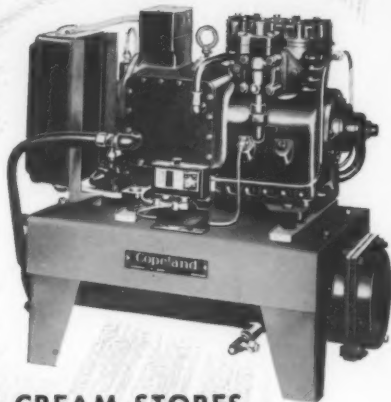
GROCERIES

TAVERNS

FLORISTS



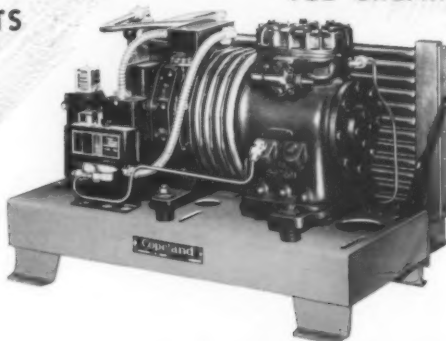
MEAT MARKETS



ICE CREAM STORES

LOCKER PLANTS

DRUG STORES



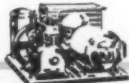
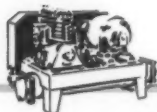
BAKERIES

. . . and you please them all

Make every prospect a customer with the line which gives you a complete range for most refrigeration requirements. Enjoy better customer relations, repeat sales and recommendations. Cash in on Copeland tradition . . . a tradition that assures top quality at all times . . . meets the demands of your prospects and foresees the needs of tomorrow's customers. Copeland is behind you all the way with consistent advertising to the markets you sell.

Copeland remote, belt-driven units are sturdy, compact. Air-cooled models from 1/4 to 3 H.P. inclusive. Water-cooled models from 1/3 H.P. to 7 1/2 H.P. Self-contained, belt-driven models through 3/4 H.P.

Tops in practical refrigeration is COPELAMETIC, the efficiently designed hermetic that is accessible in the field . . . can be serviced on the spot when the rare occasion arises. Models through 7 1/2 H. P. Write for Condensed Catalog C-52.



REFRIGERATION UNITS
(OPEN - TYPE AND COPELAMETIC)
WATER COOLERS



COPELAND REFRIGERATION CORPORATION · SIDNEY, OHIO

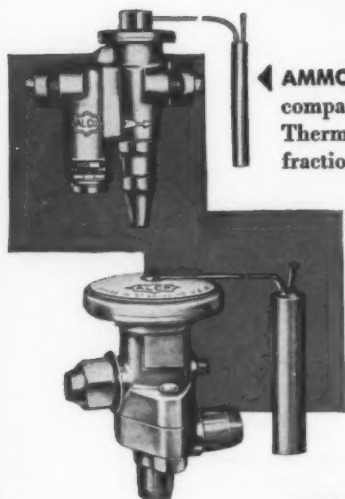
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symbol of a job well done

There's an ALCO control for every application—large or small.

Installation of an ALCO VALVE assures steady, accurate refrigerant control...maximum coil efficiency...trouble-free refrigeration.



◀ **AMMONIA THERMO VALVES**—have the same compact, come-apart design as all other Alco Thermo Valves. Large area strainers. From fractional tonnage to 125 tons.

◀ **"T" SERIES** — for automatic liquid refrigerant control on all types of refrigeration and air conditioning systems. From fractional tonnage to 50 tons "Freon-12".

J-5 FLOAT SWITCH ▶

—for liquid level control. Simple design. Application: Freon, Methyl Chloride or Ammonia.

MULTI-OUTLET VALVES ▶

—assures maximum coil efficiency on multiple systems. For all refrigerants and applications: ½ to 50 tons "Freon-12"; up to 50 tons Ammonia.



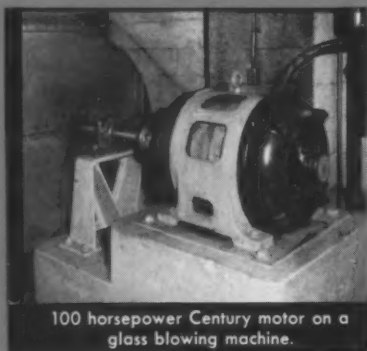
SEE YOUR ALCO WHOLESALE

ALCO VALVE CO.

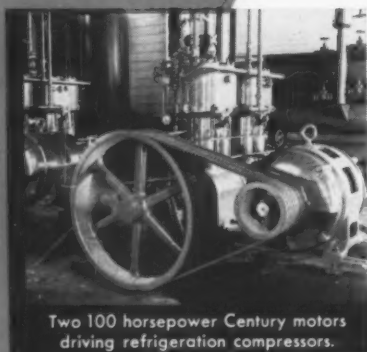
Designers and Manufacturers
of Thermostatic Expansion
Valves; Evaporator Pressure
Regulators; Solenoid Valves;
Float Valves; Float Switches.

843 KINGSLAND AVE. • ST. LOUIS 5, MO.

5218



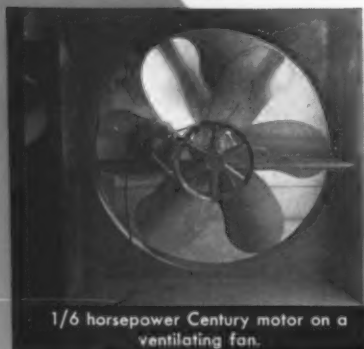
100 horsepower Century motor on a glass blowing machine.



Two 100 horsepower Century motors driving refrigeration compressors.



Century 1/2 horsepower capacitor motor on a furnace blower.



1/6 horsepower Century motor on a ventilating fan.

WHY *Century* MOTORIZED EQUIPMENT KEEPS YOUR CUSTOMERS SATISFIED...

The motor specifications—where skillfully selected—to assure the **TOP PERFORMANCE** and **DEPENDABLE QUIET SERVICE** that is built into each class of equipment.

Refrigeration compressors require one combination of operating characteristics and specifications—fans and blowers another combination—various types of heating equipment still another.

In over 50 years, Century has developed a wide line of types of motors with literally hundreds of specifications to choose from. It is easy to **ENGINEER YOUR PRODUCT PERFORMANCE—THROUGH SKILLFUL MOTOR APPLICATION.**

If you have motor service problems, phone or write to any of Century's 28 District offices regarding Century's national network of service stations—the motor exchange plan will serve you whether your motors are in or out of warranty.

Specify Century Motorized Equipment—get top equipment performance—dependable quiet service—keep your customers satisfied.

CENTURY ELECTRIC COMPANY

1806 Pine Street

• St. Louis 3, Missouri

Offices and Stock Points
in Principal Cities



NOVEMBER, 1952

VOLUME 9, No. 11

COMMERCIAL REFRIGERATION & AIR CONDITIONING

Established 1944 as
THE REFRIGERATION INDUSTRY

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8 New Bridge St.
Fleet Street

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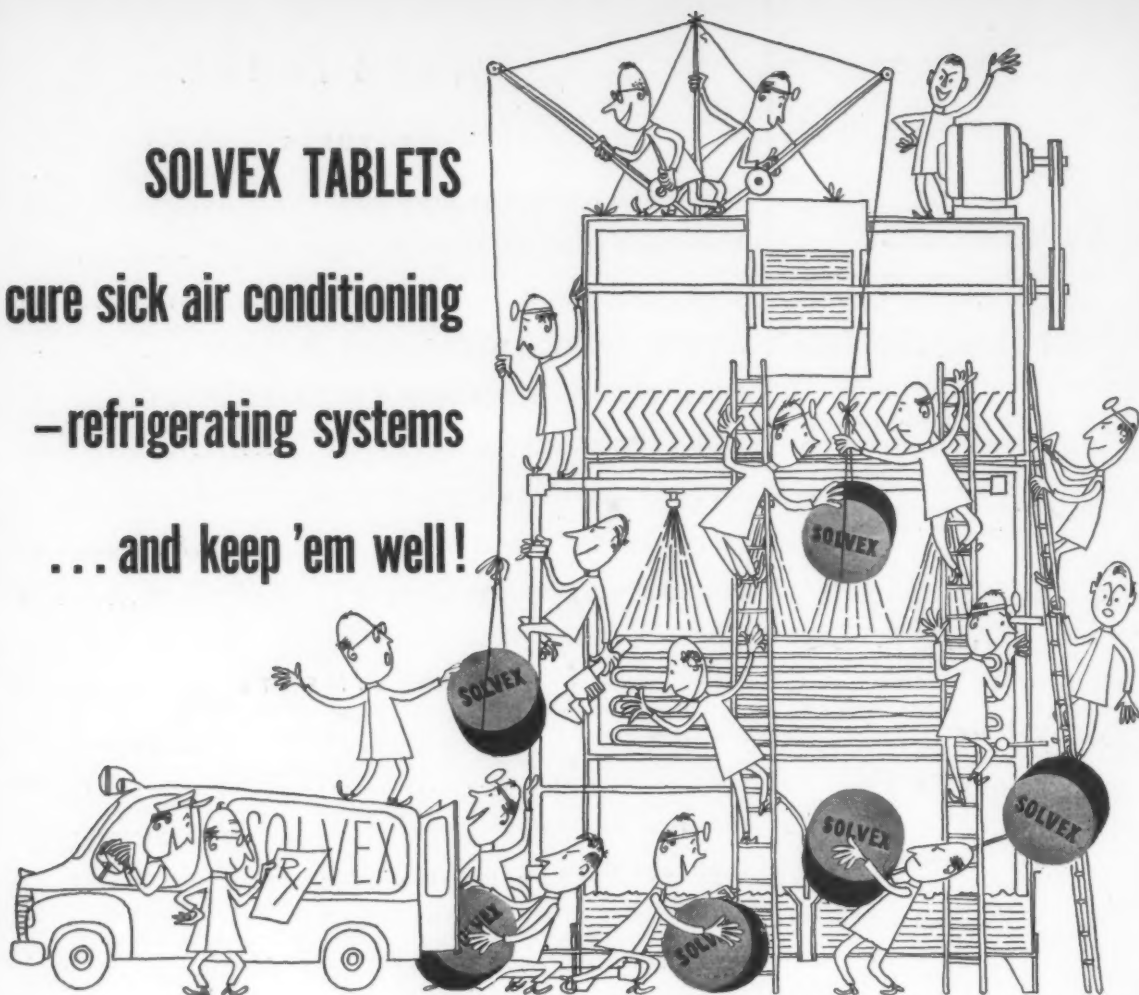


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SOLVEX TABLETS
cure sick air conditioning
—refrigerating systems
... and keep 'em well!



- Solvex Cleaner Tablets thoroughly clean fouled "evaps," cooling towers, shell and tube condensers. Head pressures can be reduced to normal in 15 to 45 minutes. Solvex can be used while the machine is in operation—unless, of course, you have a once-through closed type condenser.
- Solvex Maintenance Tablets prevent scale deposits, algae growth and accumulations of dirt and slime which cause trouble.

- Solvex is perfectly safe—does not contain destructive acids or alkalis—will not harm expensive cooling and pumping equipment or present a hazard to the operator.
- Solvex also comes in granular form for installations of 50 tons and up. Solvex Cleaner and Maintenance Grains are available in 100 lb. kegs.
- Solvex is a product of CHEMICAL SOLVENT COMPANY, Birmingham, Ala.

DISTRIBUTED BY



VIRGINIA *Refrigerants*

**VIRGINIA
 SMELTING COMPANY
 WEST NORFOLK, VA.**

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NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

Bringing Home the Bird

... Or how the CCC Plan helps close **MORE** refrigeration sales



Experience shows that a high percentage of prospects expect and need to buy on time... can't "sign on the dotted line" any other way for lack of ready cash.



Stalking sales is easier when you know your market. And by offering **COMMERCIAL CREDIT PLAN** you're using financing that millions know and prefer.



Bag more sales with CCC. It's easier to sell when you can offer *immediate possession, reasonable rates, 2 to 3 years to pay.*



Once he's bagged, you continue to benefit. Enjoy our expert credit and collection facilities and improve your own cash position by carrying less receivables.

WRITE, WIRE OR PHONE your nearest **COMMERCIAL CREDIT** office for complete information and facts on how many other Distributors and Dealers are successfully using our **PLAN**. Phone the **COMMERCIAL CREDIT** office in your city or write or wire **COMMERCIAL CREDIT, 14 Light St., Baltimore 2, Maryland.**

COMMERCIAL CREDIT CORPORATION

A subsidiary of Commercial Credit Company, Baltimore
... Capital and Surplus over \$125,000,000 ... offices
in principal cities of the United States and Canada.

*To Save You Time and
Money on the Job...*



SOLENOID VALVES

*Provide Complete Interchangeability
of Coil Assembly...*

- ONE Coil
- ONE Coil Sleeve
- ONE Coil Plate
- ONE Housing
- ONE Plunger

... fits every J-E Solenoid Valve, from 3 tons to 400 tons of refrigeration. Think of all the confusion and delay this will save you!



ALL JE Solenoid Valves Have These 5 Major Features of Dependability

- TIGHT SEATING — NO BUBBLE TOLERANCE
- SIMPLICITY — ONLY TWO MOVING PARTS
- LONG LIFE — COOL COILS
- DURABILITY — ALL CORROSION-RESISTANT MATERIAL
- OPENING PRESSURE DIFFERENTIAL — HIGHER THAN MOST OTHERS ON THE MARKET.

May we submit samples for your test and approval? Write today for details.

JACKES-EVANS MANUFACTURING COMPANY
CONTROLS DIVISION
4427 GERALDINE AVE. • ST. LOUIS 13, MO.

PATENT PENDING



Type 2P3



Type 3MS



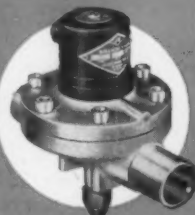
Type 4MP



Type 6MS



Type 6MF



Type 12MS

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NOVEMBER, 1952 • COMMERCIAL REFRIGERATION



Bending

REVERE

DRYSEAL

REFRIGERATION TUBE

is much easier!

You don't have to go in training to be able to bend dead-soft Dryseal. Just use your head when you order Refrigeration tube. Specify Dryseal! Then just use your hands to bend it . . . it's as easy and simple as that. The special temper and ductility of Dryseal also make it easy to flare for compression fittings without splitting.

Another very important feature of Dryseal is the double-crimp seal at each end of the tube. This is the final step in manufacturing and keeps dirt and moisture from entering the tube. The seal is made in such a way as not to change the diameter of the tube, so that it can pass through any opening large enough for the tube itself.

And, for your greater convenience, Dryseal is packed in a nifty-50 one-coil carton. This carton, which has been attractively designed for easy identification in stock, contains one 50-foot coil of Dryseal . . . is easier to handle, light weight, economical and is sturdily made to assure protection of the tube.



REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.;
Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.—
Sales Offices in Principal Cities, Distributors Everywhere

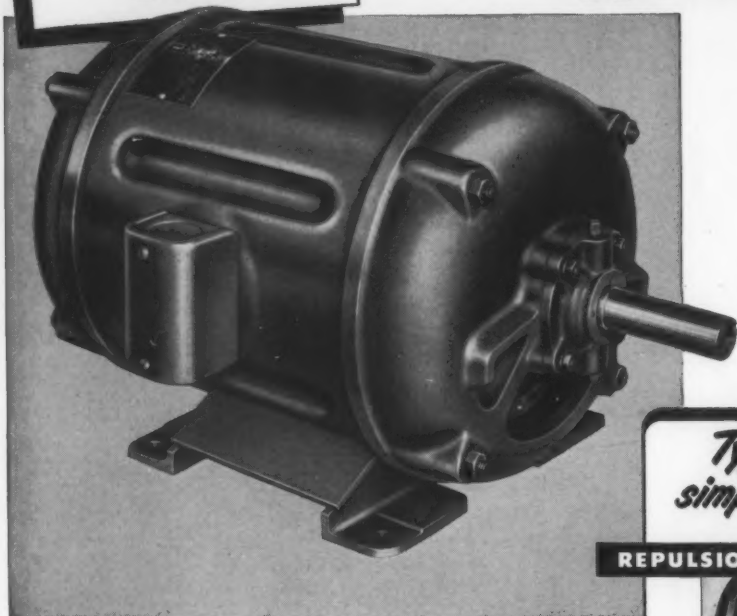
SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

Wagner
ELECTRIC MOTORS
... the choice of leaders
in industry

Wagner

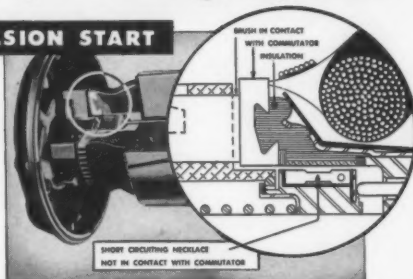
Type RA Motors—

dependable
versatile
troublefree



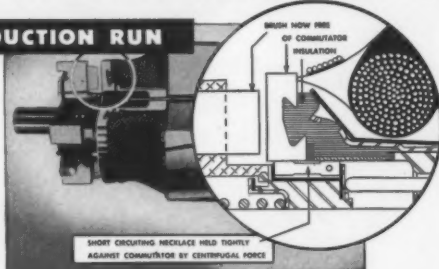
*Type RA offers the most
simplified design to provide:*

REPULSION START



Starting period—Short-circuiting necklace is not in contact with commutator bars. A governor spring holds barrel in starting position. Brush assembly completes selected circuits enabling motor to start as a repulsion motor.

INDUCTION RUN



Running period—Governor weights (actuating pushrods) have forced spring barrel forward until short-circuiting necklace connects commutator bars to short-circuiting ring, forming a "squirrel cage" to permit operation as an induction motor.

So many manufacturers of motor-driven equipment and appliances in every type of industry have chosen the Wagner Type RA repulsion-start induction motor as standard equipment for their products that it has become known as industry's general purpose motor.

Type RA is first choice for single-phase applications because of its ability to start heavy loads with low starting current. This makes it especially suitable for machines that have high inertia or heavy friction at starting. Then, too, Type RA is chosen because it gives years of reliable service . . . is economical to maintain . . . requires only minimum servicing . . . and is free from vibration and noise.

When you standardize on Wagner Motors—you get the advantages of a liberal warranty . . . of nationwide service facilities, with replacement motors and parts available from 25 Wagner-owned Service Branches and more than 650 Authorized Service Stations. You can choose from a wide variety of types and sizes (from 1/125 to 400 hp). Bulletin MU-185 gives complete information—write for your copy.

Wagner
Electric Corporation
EST. 1891

WAGNER ELECTRIC CORPORATION
6442 Plymouth Ave., St. Louis 14, Mo., U.S.A.

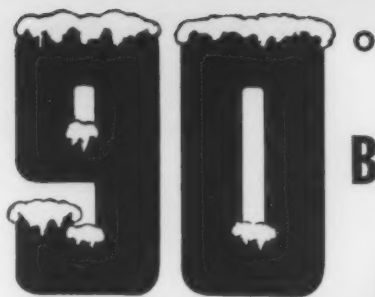
ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS • AIR AND HYDRAULIC

BRANCHES IN 32 PRINCIPAL CITIES

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NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

FOR THIS



BELOW COLD LABORATORY

**PERFECTION
STOVE COMPANY
CHOOSES
DEPENDABLE
BRUNNER
REFRIGERATION**

In the new sub-zero testing laboratory of the Perfection Stove Company — man-made temperatures can go as low as -90° F. That's cold enough to change oils and diesel fuels to near solids, and cause many peculiarities to appear in metals.

To produce these blood-chilling temperatures, three Brunner compressors (two 40 HP, one 50 HP) are installed in a two-stage system, using F-22 refrigerant. The entire system is controlled by a single recording temperature controller — at a setting of plus or minus $1\frac{1}{2}^{\circ}$ F.

The precision engineering and extreme attention to detail in the manufacture of Brunner refrigeration make Brunner the logical choice for the tough jobs — big or small. Let your Brunner representative show you why hundreds of contractors depend upon Brunner for top performance — minimum maintenance — maximum profits. Or write us — Dept. G-11.

FOR THE TOUGH JOBS —
YOU CAN
DEPEND UPON —

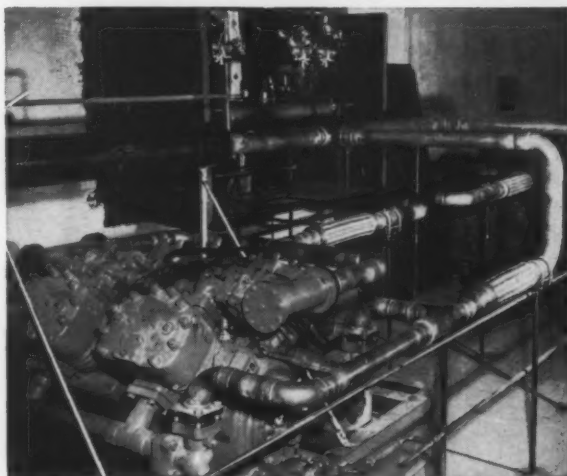


**REFRIGERATION
AND
AIR CONDITIONING**

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and AIR CONDITIONING • NOVEMBER, 1952



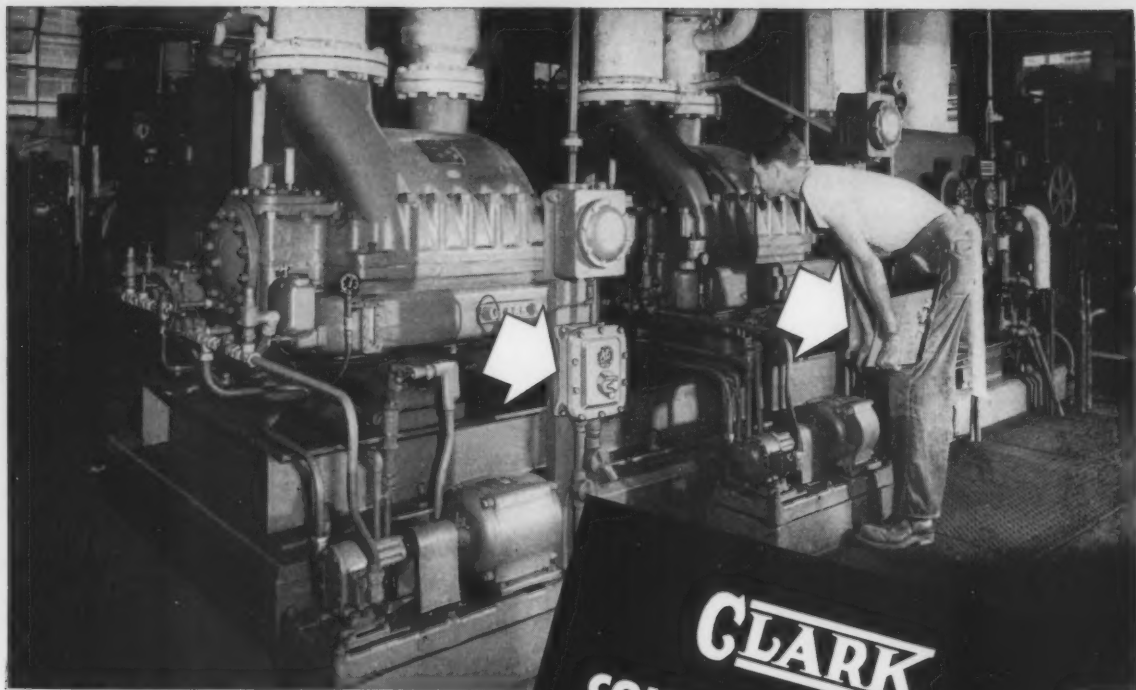
Cold mist rises in laboratory as technicians brave temperatures more than 100° BELOW freezing!



One of the eight-cylinder Brunner compressors on the job at the Perfection Stove Co. laboratory.

This installation of Brunner Equipment installed by Ramsey-Bennett Co., Cleveland, Ohio.

● For every air conditioning or refrigeration need . . . Brunner condensing units from $\frac{1}{4}$ HP to 100 HP — 69 air and water-cooled models. Self-contained Brunner packaged air conditioning units up to 10 HP.



Two Clark Centrifugal Compressors, equipped with Allen-Bradley Solenoid Starters, in NEMA Type 7 enclosures, installed in Sun Oil Company's refinery at Marcus Hook, Pa.

CLARK
COMPRESSOR UNITS
equipped with
ALLEN-BRADLEY
TROUBLE FREE
MOTOR CONTROLS

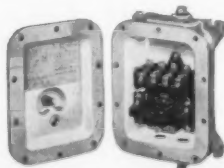


**A-B Bulletin 709
 Solenoid Starter**

Size 1 Starter with cover removed. Dependable overload relays. White interiors. Easy to wire. Bonderized undercoat for long enclosure life.

**Enclosure for Hazardous
 Gas Locations**

Bulletin 709 Solenoid Starter in a NEMA Type 7 enclosure for hazardous gas locations. Note the wide machined flanges.



Why are Allen-Bradley starters so popular for refrigeration and air-conditioning service? . . . Because they do not require regular attention; they are trouble free. Only ONE moving part. No pivots, pins, or bearings to corrode or stick . . . no jumpers to break. You install them . . . and forget them!

No contact maintenance . . . Allen-Bradley cadmium silver alloy contacts never need cleaning, filing, or dressing.

Dependable overload relays . . . Allen-Bradley thermal relays are dependable and remain accurate in their operation, even after long service.

The Allen-Bradley trademark stands for millions of trouble free operations.

Allen-Bradley Co., 1340 S. Second St., Milwaukee 4, Wis.

ALLEN-BRADLEY SOLENOID MOTOR CONTROLS

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NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

WHY DESTROY

Expensive Equipment

by using

Destructive

Substances?

Chemicals that **EAT** their way out of Metal, Wood or Plastic Containers are injurious to the very surfaces that they are intended to treat. If a glass container should be accidentally broken, the contents could do untold damage to valuable property!



SOLVEX

(In tablet or granular form)

LOWERS HIGH HEAD PRESSURE QUICKLY
(And May Be Used While Plant Is In Operation)

REMOVES RUST, SCALE, ALGAE
And Other Encrusting Matter from Condenser
Tubes and Water Jackets in 1 to 5 Days.

CLEANS SCALE AND CORROSION FROM
EVAPORATIVE CONDENSERS, BOILERS,
HEATERS, TANKS . . . AND KEEPS 'EM CLEAN!

BE SAFE! USE SOLVEX!

ECONOMICAL AND SAFE TO CARRY TO CLEANING JOBS

SOLVEX Is A Very Effective CLEANING AGENT

FOR AIR CONDITIONING and REFRIGERATION SYSTEMS

Manufactured By

CHEMICAL SOLVENT COMPANY

3005 16th Street North, Birmingham, Alabama

Distributed By

VIRGINIA SMELTING COMPANY

West Norfolk, Virginia

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1877



1952

For over 50,000,000 good reasons
DETROIT LUBRICATOR COMPANY
 revises its name to

DETROIT *Controls*



ESTABLISHED AS **DETROIT LUBRICATOR COMPANY** IN 1877

Controls **CORPORATION**

5900 TRUMBULL AVE., DETROIT 8, MICHIGAN • Division of **AMERICAN RADIATOR & Standard Sanitary CORPORATION**
 REPRESENTATIVES IN PRINCIPAL CITIES • Canadian Representatives in Montreal, Toronto, Winnipeg — RAILWAY & ENGINEERING SPECIALTIES, LTD.

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NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

PERHAPS you're wondering why a company in its 75th year of business would change its name. Quite frankly, on checking the record in this our diamond anniversary year, we decided purely and simply that we had outgrown the name Detroit Lubricator Company.

During the course of 75 years of constant business growth and expansion, **DETROIT** has progressed from leadership in one industry into leadership in still another industry—that of building the finest automatic controls for heating, refrigeration, air conditioning, engine protection, home appliances and industrial uses. Over 50,000,000 of these superior **DETROIT** controls have been produced to serve home and industry—and that means a lot of satisfied customers—a lot of mighty *good* reasons why we feel we have earned the right to our new name... Detroit Controls Corporation.

We sincerely hope that as Detroit Controls Corporation we will continue to enjoy the splendid cooperation and support you have always given Detroit Lubricator Company in the past.

To this end, our people, our policies and our production remain the same—pledged always to highest quality to bring you the very finest automatic controls obtainable.

Controls CORPORATION



AUTOMATIC CONTROLS for

REFRIGERATION	AIR CONDITIONING	DOMESTIC HEATING	
AVIATION	TRANSPORTATION	HOME APPLIANCES	INDUSTRIAL USES

Serving home and industry—AMERICAN STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT CONTROLS • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON

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and AIR CONDITIONING • NOVEMBER, 1952

Designed Specifically for Dehydrating and Testing Refrigeration and Air Conditioning Units

BEACH-RUSS PORTABLE VACUUM PUMPS

It's the LAW!

by Albert Woodruff Gray

Legal problems are an inherent part of operating any business enterprise. If you are beset by them, you'd better talk to your lawyer. This column, which will appear periodically in the issues of **COMMERCIAL REFRIGERATION AND AIR CONDITIONING**, in no way aspires to serve as legal counsel for our readers. It is prepared, however, by a man well versed in legal practices and opinions, and by presenting digests of actual court cases involving commercial refrigeration and air conditioning dealers and contractors we hope to enable our readers to sidestep some of the legal pitfalls into which they otherwise might unwittingly stumble.

—The Editors

REFRIGERATOR SALE VOID

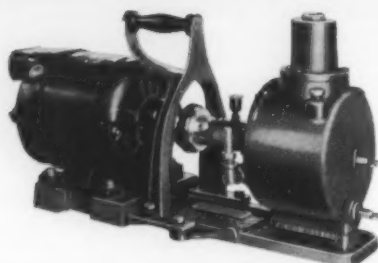
A SALESMAN for a refrigerator dealer assured the proprietors of a meat and vegetable market in Texas that the vegetable case he was offering them would keep vegetables for two weeks and the meat box preserve its contents for at least ten days. Further, that these refrigerator boxes would be serviced by the dealer for ninety days.

The boxes were purchased for \$4,046, payable in monthly installments of \$163. When the cases failed to function as the salesman had assured the purchasers they would and complaints repeatedly made to the dealer were ineffectual, the purchasers went to the office of the seller at Dallas after the ninety days in which the boxes were to be serviced had expired.

The buyers insisted that the refrigerator boxes should be put in proper working condition. The dealer replied that he was not interested in the boxes, whether they ran or didn't run, as the ninety days had expired, that the purchasers were worth the money remaining unpaid on the contracts and they would have to pay and bear their loss.

Later when suit was brought by the dealer for the amount remaining unpaid on these contracts the buyers contended in their defense that the sales contract was void for fraud in the representations made by the salesman when the contract was signed, and demanded not only that the contract be cancelled, but that they have judgment against the dealer for the amount already paid and damages for their loss of trade.

Deciding against the dealer and in favor of these purchasers the Texas court said,



The Service Man's Dream! MODEL O SINGLE STAGE PUMP

Can be carried anywhere. Specifically designed for the one job of providing a completely practical and portable vacuum pump for all field jobs where a vacuum of 1 mm. is adequate.

SPECIFICATIONS

Vacuum, blank flange—1 mm.
Capacity—1 CFM.
Horsepower—1/6 HP.
Weight—48 lbs.
Oiling—Pump automatically lubricated.
Over-all length—21".



SPECIFICATIONS

Vacuum, blank flange—1/10 mm.
Capacity—2.5 CFM.
Horsepower—1/3 HP.
Weight—80 lbs.
Oiling—Pump automatically lubricated.
Over-all length—21".
NOTE: All valves are eliminated in this model.

For Higher Vacuum

MODEL A TWO-STAGE PUMP

A completely portable two-stage pump for vacuum up to 1/10 mm. It is the only unit combining all the features desired by the air-conditioning and refrigeration service man . . . rugged, compact, light-weight, with extremely long life . . . and, above all, unusually high performance characteristics. It provides required two-stage operation in one small pump that eliminates complicated valves and adjustments.

Beach-Russ Vacuum Pumps are also made in types and sizes for evacuation and testing of refrigeration equipment on a production basis.

BEACH-RUSS COMPANY 56 CHURCH ST., NEW YORK 7, N. Y.

Send descriptive literature covering ☐ Model O Single-Stage Vacuum Pumps.
☐ Model A Two-Stage Pumps.

We'd like to see the Beach-Russ engineer in our area ☐.

Name.....

Company.....

Address.....

City.....

Zone No.....

State.....

BEACH-RUSS COMPANY
56 CHURCH STREET • NEW YORK 7, N. Y.

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NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

Announcement

The Kerotest Manufacturing Company has become a wholly owned subsidiary of Tube Turns, Inc., Louisville, Ky., the nation's No. 1 producer of seamless welding fittings and flanges.

Kerotest will continue to operate under its own name. And it will continue to make the high quality steel and brass valves that have earned it an enviable reputation.

All current and future orders will be shipped as scheduled. Service and trade relationships will be improved.

Kerotest's present excellent position in the fields it serves will be further enhanced by the engineering, research, manufacturing and management resources of the parent company.

Kerotest's management and personnel have been largely retained. GEORGE O. BOOMER, *president* of Tube Turns, Inc., is now chairman of the board. JOHN G. SEILER, *executive vice president*, and ROBERT J. LANDOLT, *vice president and controller* of Tube Turns, Inc., have been appointed vice presidents. WALTER G. SWANEY, *vice president and secretary*, and J. D. ISAACKS, *vice president* of Kerotest, remain in the same capacities.



KEROTEST

MANUFACTURING COMPANY

A wholly owned subsidiary of TUBE TURNS, INC., Louisville, Kentucky
PITTSBURGH 22, PA.

NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • TULSA • ODESSA, TEX.
LOS ANGELES • CHARLESTON, W. VA. • RICHMOND, VA.

and AIR CONDITIONING • Circle No. 14 on Reader Service Card for more information
• NOVEMBER, 1952

new, exclusive



developments

MAKE SHERER CASES A TRUE INVESTMENT

that can pay your customers dividends from savings
of up to \$128.00 a year, per 6 ft. of display case

ATOMIZED

AIR

Saves by eliminating waste — provides gentle circulation of properly moisture-conditioned, refrigerated air around all merchandise in display well, without dehydrating blast. Guards the appearance and freshness that wins sales and creates fast turnover. Eliminates costly spoilage.

DIRECTIONAL

FLOW

Saves by eliminating "spillage" — controls and confines flow of atomized air to display well. There's no costly "spillage" to cause constant extra overtime work by the condensing unit.

RE-CIRCULATED

AIR

Saves by reducing running time 15% — after air moves across the display well, it is drawn down through the base of the well and back to the refrigerating coil, where only a slight lowering of the temperature is required so that it can be used over and over again. This saves as much as 15% running time and permits the greater economy of a smaller, less costly condensing unit.

THROUGH THESE EXCLUSIVE SHERER DEVELOPMENTS you offer your customer a true investment that can pay cash dividends through important savings — as much as \$210.00 annually per 10' refrigerated display case . . .

PLUS—Famous Sherer "Automatic Selling" features of design such as "wide-angle visibility" — giant "panoramic" display wells that will increase unplanned impulse sales.

WRITE FOR
FRANCHISE
INFORMATION

100 years experience in making food merchandising more profitable.

Model UL2710C — for continuous display — convertible — 3 canopy styles — 4 styles of storage base arrangements.

SHERER-GILLETT CO., marshall, michigan

"While it is true that a purchaser of personal property may waive or lose his right to rescind for fraud by continuing the use of the property after knowledge of the facts which give the right to rescind, such rule has qualifications and exceptions. If by the promises and acts of the seller the purchaser is led to believe that the item or items purchased will be repaired or otherwise made to perform as originally represented, the purchaser is justified in believing such promises and and is excused from immediately repudiating the sale or contract."

Super-Cold Southwest Co. v. Chowning, 248 S.W.2d 504, Texas

DELIVERY IN A REASONABLE PERIOD OF TIME

A PROSPECT in McKeesport, Pa., called at the store of a refrigeration dealer and discussed the purchase of a particular piece of equipment. A few days later a salesman called on this prospect saying that he represented this store but that a refrigerator of the type desired was not available from that dealer.

He pointed out, however, that if the prospect would deal directly with him he would see that a refrigerator of the specified type was delivered, "If at all possible, on the next day." The prospect then gave the salesman a check for \$100, but when on the third day the case in question had not been delivered the purchaser stopped payment on the check, bought a case from another dealer and refused to accept delivery later of the first refrigerator.

When the salesman sued to recover the amount of this check the customer maintained in defense that the refrigerator for which the check had been written had not been delivered as agreed.

Holding that the sale of this refrigerator was a valid and enforceable sale and the purchaser liable for payment, the Pennsylvania court said,

"The only agreement was that all possible speed would be used to accomplish the delivery. Where by a contract to sell or a sale the seller is bound to send the goods to the buyer but no time for sending them is fixed, the seller is bound to send them within a reasonable time."

Mullen v. Hibbert, 33 Atl. 2d 433, Pennsylvania

"SKIP" CLAUSES

A CONDITIONAL SALE contract in Mississippi, for the sale of two refrigerators, contained a clause in reference to the liability of the dealer after the assignment of the contract to a finance company.

This clause read, "Should the purchaser 'skip out' with the merchandise and neither can be located, you will be relieved of your endorsement. Should we be successful in locating the merchandise during life of the contract you will, of course, repurchase the merchandise from

Continued on page 98

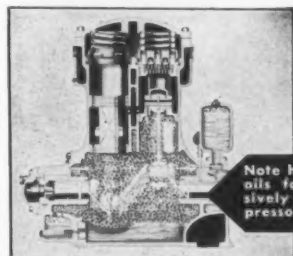
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NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

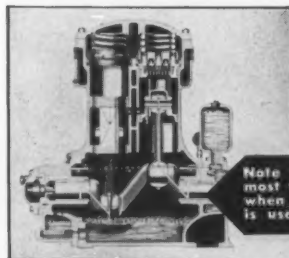
..now.. ..ANSUL OIL IS NON-FOAMING!



**NOTE THE DIFFERENCE BETWEEN
ORDINARY OILS...WHICH FOAM
... AND ANSUL NON-FOAMING
REFRIGERATION OIL**



Note how ordinary
oils foam ex-
cessively when com-
pressor starts.



Note there is al-
most no foaming
when ANSUL OIL
is used.

When a compressor starts, the surge of the refrigerant causes ordinary oils to foam. This results in a loss of oil from the compressor and causes other harmful effects in the system. ANSUL NON-FOAMING OIL eliminates the problems which result from foaming and thereby insures maximum lubricating efficiency.

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and AIR CONDITIONING • NOVEMBER, 1952

NOW ... MORE THAN EVER ... ANSUL is the **FINEST REFRIGERATION OIL at any price!** In addition to the features which have made it outstanding in the past ... *High Lubricity, High Stability, Low Moisture, and Low Wax* ... a new and vital improvement has been made ... ANSUL OIL IS NOW PROCESSED TO PROVIDE NON-FOAMING CHARACTERISTICS ... a distinct advancement in the science of refrigeration lubrication.

Here are some of the advantages provided by the NON-FOAMING characteristic of ANSUL OIL:

- INSURES MAXIMUM LUBRICATION.
- IMPROVES EVAPORATION EFFICIENCY.
- PREVENTS DAMAGE TO COMPRESSOR VALVES.
- REDUCES DANGER OF PLUGGED CAPILLARIES.
- REDUCES DEPENDENCY ON OIL SEPARATORS.

ANSUL is the **LARGEST SELLING REFRIGERATION OIL** sold through Refrigeration Wholesalers ... **EXCLUSIVELY.**

And there are many other reasons why refrigeration men persistently prefer ANSUL.



ANSUL
Chemical Company

REFRIGERATION DIVISION • MARINETTE, WISCONSIN

ANSUL SULFUR DIOXIDE • ANSUL METHYL CHLORIDE • ANSUL OIL • KINETIC "FREON" REFRIGERANTS
ALSO MANUFACTURERS OF INDUSTRIAL CHEMICALS AND DRY CHEMICAL FIRE EXTINGUISHERS

What's the latest scoop on Ice Makers?



Now there are *two* sizes of Carrier Ice Makers: for 200 lbs. and 450 lbs. of ice a day . . . a capacity for every ice user in the market.

And the market has never been bigger. Bars, clubs, hotels, hospitals, restaurants . . . hundreds of businesses right *in your vicinity* will be happy to hear what this new Carrier Ice Maker has to offer.

You can show them in a few minutes how a Carrier Ice Maker can make \$1 worth of ice for about 15 cents' worth of water and electricity, at normal utility rates . . . how they can often pay for their Ice Maker out of savings in just one year.

These are the economic facts, and they're being aggressively advertised in these markets, setting up your prospects for your call.

And once you get a foot in the door, you've made a sale. Because there's no doubt about the superiority of the Carrier Ice Maker. Features? It has loads of them . . . *exclusive* features, like:

- a factory-built-in crusher *that takes no extra space.*
- a divided bin for storing cubes and crushed ice at the same time.
- compactness . . . fits in 2 x 2 ft. floor space.

The market's ripe for this new Carrier Ice Maker, with a nice profit margin for you. Write for promotional aids today. Carrier Corporation, Syracuse, New York.



air conditioning • refrigeration • industrial heating

Circle No. 17 on Reader Service Card for more information

NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

The When, Where, Why and How of Silver Alloy Brazing—

If you're in any way interested in metal joining, you'll find a lot of useful information and data on the subject in the free printed matter below. Copies of one or all are yours for the asking. Write for them today.

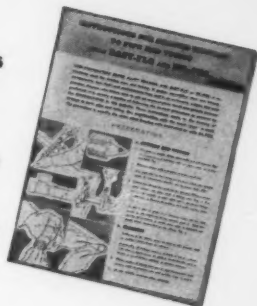
BULLETIN 20

This 24-page bulletin is a "must" for every design and production engineer. It gives full details about EASY-FLO and SIL-FOS—what the alloys are—what they do—how to use them—also a lot of valuable information on joint design, heating methods and fast production procedures. You'll find plenty of meat in the illustrations, too.



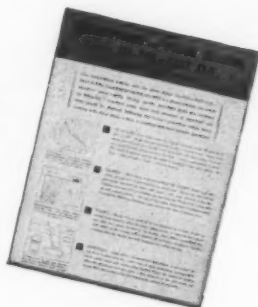
BULLETIN 17

This bulletin gives complete instructions for brazing fittings to pipe and tubing with EASY-FLO and SIL-FOS. It tells—how to cut and fit pipe and tubing—how to clean and flux surfaces to be joined—how to support assemblies—how to heat—how to clean after brazing. It covers the making of vertical up, vertical down and horizontal joints.



TORCH BRAZING INSTRUCTIONS

This bulletin gives full instructions for EASY-FLO and SIL-FOS alloy brazing with gas torches—including fit of joint—cleaning—fluxing—assembling—heating—applying the alloy—flux removal after brazing. Ask for the Torch Brazing Instruction Bulletin.



BULLETIN 11-A

This bulletin covers an important item in metal working shops today—the mounting of cemented carbide tool tips with EASY-FLO No. 3 on lathe and milling cutters and other carbide tipped tools and parts. It explains why EASY-FLO No. 3 is recommended for this work by leading carbide tip manufacturers and covers the procedure step-by-step for various heating methods.



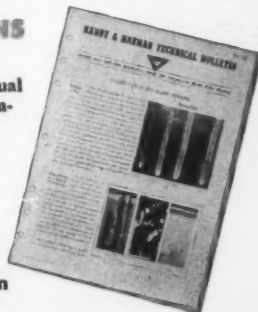
BULLETIN 14

This bulletin covers the repair of broken broaches, drills, taps, band saws, circular saws, form cutters and milling cutters of all kinds with EASY-FLO. It explains how, with a few cents' worth of EASY-FLO, valuable tools can be put back in service in a jiffy at a fraction of the cost of replacement.



TECHNICAL BULLETINS

These bulletins are published periodically. They contain factual technical data and new information about low-temperature silver alloy brazing as uncovered through the Research that is carried on continually in our laboratories. If you would like to receive these bulletins as published, write and ask us to add your name to the Technical Bulletin mailing list.



HANDY & HARMAN

General Offices: 82 Fulton St., New York 38, N. Y.

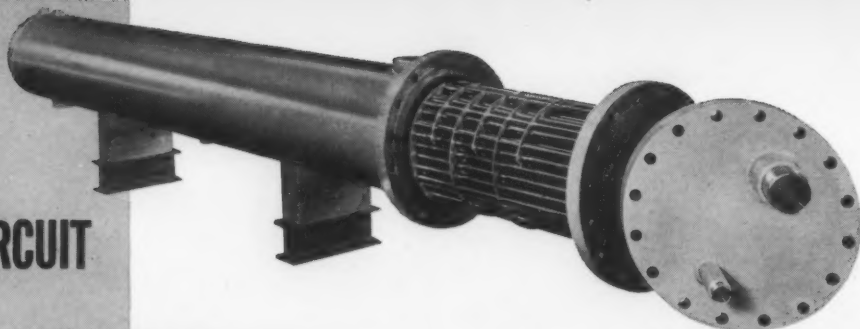
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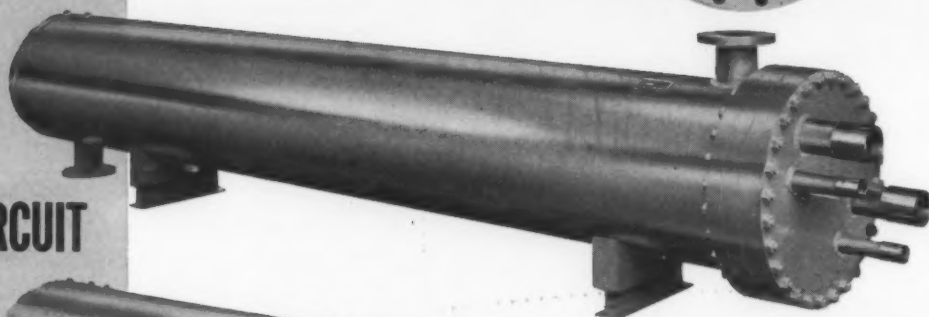
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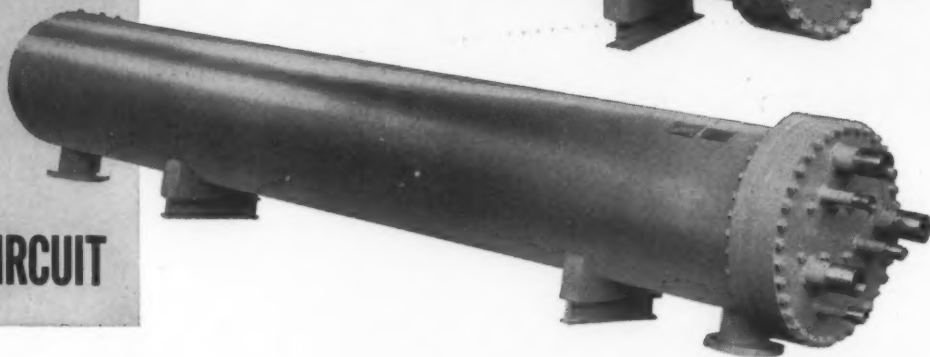
1 CIRCUIT



2 CIRCUIT



3 CIRCUIT



p-k FREON COOLERS

even out fluctuating loads



Here is the sure answer to the problem of fluctuating cooling loads—supplied by **p-k**. One, two or three circuit **p-k** Freon Coolers are specifically recommended to match your load. They are the practical, logical, economical answer to uniform cooling needs. Each type is designed to insure maximum heat transfer efficiency under the particular load conditions specified for the job. Regardless of weather conditions—hot, cold or

moderate—**p-k** Freon Coolers will constantly maintain optimum temperature differences and high refrigerating efficiency.

For the best in value and dependable service—plus dependable operating efficiency—it will pay you to know all about **p-k** Freon Coolers. Write today for catalog No. 101 covering size ranges, engineering tables and other important data. Send for it now, for immediate use or later reference.

© 1906



the **Patterson-Kelley Co., Inc.**

410 Burson St., East Stroudsburg, Penna.

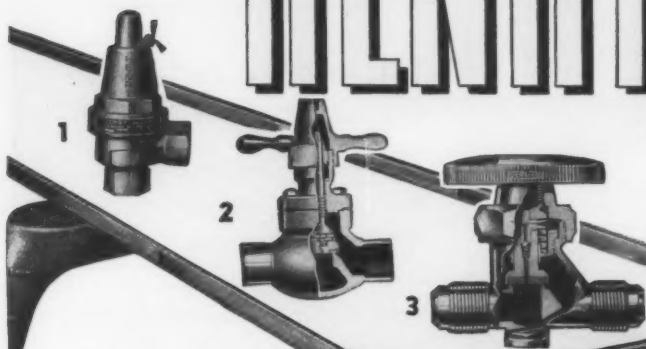
101 Park Avenue, New York 17 • Railway Exchange Building, Chicago 4 • 1700 Walnut Street, Philadelphia 3 • 95-A Huntington Avenue, Boston 16 • and other principal cities

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NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

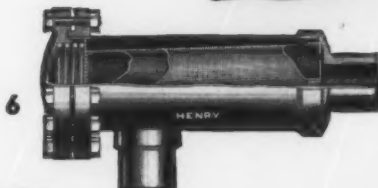
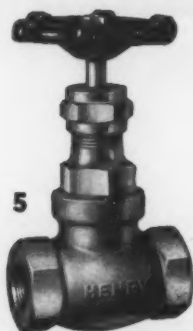
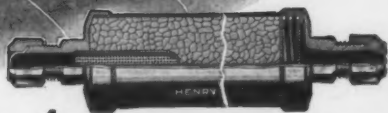
HENRY

REALLY GIVES YOU
SOMETHING EXTRA!



ADVANCED ENGINEERING

- 1 RELIEF VALVES** diaphragm construction, positive controlled cushion reseating with relief capacity that meets latest code requirements.
- 2 WING CAP VALVES** greater flow, bolted bonnet and self-aligning stem disc.
- 3 PACKLESS VALVES** still the only Balanced-Action valve on the market—no extra cost.
- 4 DRIERS** forged brass end caps with integral fittings, natural finish, Abso-Dry pressure sealed, dispersion tube and extra capacity.
- 5 AMMONIA VALVES** compact and strong, self-aligning stem disc.
- 6 STRAINERS** forged brass end caps with integral fittings, reinforced screen, large filtering area, distortion-proof clean-out flange.



Sold by
Leading Wholesalers

HENRY VALVE CO.

Valves • Driers • Strainers • Control Devices and Accessories
for Refrigeration, Air Conditioning and Industrial Applications

MELROSE PARK, ILL. (CHICAGO SUBURB)
CABLE: HEVALCO, MELROSE PARK, ILLINOIS



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and AIR CONDITIONING • NOVEMBER, 1952

...Just show it to them!

Most of your customers have read about *Thermopane** insulating glass with its famous *Bondermetic Seal**. Be sure your customers know *your* cases have it.

And show them reprints of ads like the one shown here . . . we'll send you some. Just tell us how many. Write Libbey-Owens-Ford Glass Company, 29112 Nicholas Building, Toledo 3, Ohio.

This big ad tells your customers about it . . . in

Chain Store Age Nov.
Quick Frozen Foods Nov.
National Grocers Bulletin Nov.
Food Topics 11-24
Super Market Merchandising . . . Dec.
Meat Merchandising Dec.
Progressive Grocer Dec.



Thermopane

Be sure this name is on the VISUAL FRONT of the next self-service cabinet you buy

It pays to give your customers a clear, clean view of your frozen foods . . . self-service that really *sells*!

That's why you'll want to take a good close look at the Visual Front in the next refrigerated case you buy. The seal between the panes of the glass unit is the thing to watch for. Most of the better cases have *Thermopane** insulating glass—because *Thermopane* alone has the famous *Bondermetic Seal** which prevents moisture and dirt from getting between the panes. This seal is metal-to-glass . . . no organic material that can deteriorate or leak.

You'll get better self-service that's so important to you: sealed and delivered—by *Thermopane* insulating glass. Look for the *Thermopane* name imprinted on the seal. Libbey-Owens-Ford Glass Company, 0900 Nicholas Building, Toledo 3, Ohio.

Thermopane
 FOR BETTER VISUAL DISPLAY **Thermopane** MARK WITH POWDERED PLATE GLASS

Don't Forget to Check Seal Between Panes of Glass. Bondermetic Seal Prevents Moisture and Dirt from Getting Between Panes.

2 New Uses for SPORLAN *Catch-All* FILTER-DRIERS!



FILTERING instead of **STRAINING** *plus* **MOISTURE REMOVAL** on Comfort Cooling Refrigeration Systems

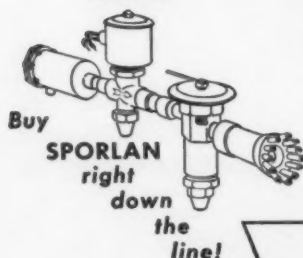
Yes

Sporlan Catch-Alls with their tremendous Tri-dimensional filtering area have conclusively proved that they will remove foreign matter from the refrigerant quicker and better than strainers . . . and in addition, will remove the fine particles which no strainer can possibly do. At last you can be rid of these fine particles that cause so much abrasive damage to all moving parts of the system.

For many years it was believed that water in the refrigerant was no problem, because freeze-ups did not occur in comfort cooling. But today we know that the moisture in these systems causes corrosion, acidity, oil contamination and sludge. This condition becomes even more critical on hermetic compressors causing breakdown of insulation on the motor windings with resultant burn-outs. Here again only Sporlan Catch-Alls with their exclusive drying ability can remove the moisture, reduce the acidity and eliminate all the problems caused by moisture.

Here Are The 5 Exclusive Catch-All Filter-Drier Features That No Other Strainer or Drier Can Claim

1. They cannot powder!
2. They cannot pack!
3. The refrigerant cannot channel around the desiccant!
4. The unique, porous Catch-All cores are molded of minute particles of a highly efficient desiccant, the efficiency of which is greater than that of the same desiccant in granular form.
5. They dry down to a low end point . . . a point so low that any remaining moisture is absolutely harmless!



When you want perfectly clean, perfectly dry refrigeration systems...Install Sporlan Catch-Alls, the perfect Filter-Drier, and get Peak Performance on All Installations.



SPORLAN VALVE COMPANY

7525 SUSSEX AVE. ST. LOUIS 17, MO.

EXPORT DEPARTMENT
89 BROAD STREET NEW YORK 4, N. Y.

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Want to "clean up" on some extra profits?

Frigidaire Cleaners and Polishes

make good service jobs look even better—bring in easy, extra sales, too!

Specially formulated Frigidaire Preparations can do double duty for you. They can help build customer satisfaction by adding the finishing touch to a service job. And they can also become a steady source of extra profits—because it's easy to sell your customers on using the same professional-type cleaners that you use.

Display these handy cleaners and polishes—carry them with you on service calls—and then just watch those "extra" sales soar!



Frigidaire Surface Renewer is the ideal polish and cleaner for refrigerator cabinets and all other Dulux surfaces—perfect, too, for automobiles, furniture and silverware, and plated metal surfaces. It restores original luster and leaves a tough wax coating to protect surfaces for months. Available in 16-ounce cans. Try selling on every service call—a wonderful way to build good-will for service organizations.



Frigidaire Plastic Cleaner cleans and protects white plastic surfaces such as ice cream cabinet lids, refrigerator door moldings, interior panels. Let your customers know how it prolongs life of plastic surfaces—reduces tendency of plastic to pick up and hold dirt and lint.



Frigidaire Porcelain Speed Cleaner

removes stains, dirt and discoloration from porcelain surfaces. Inexpensive, easy to use. Tell customers how handy it is for cleaning and polishing ranges, refrigerators, washers, dryers, sinks, bathroom fixtures.



Frigidaire Nu-Coat produces a beautiful, lasting, protective coat—excellent for all rubber accessories and leather goods. It cleans and waxes refrigerator rubber door seals in one operation. Show your customers how easily it's applied.



This attractive, inexpensive display is available to boost cleaner and polish sales for service shops. See your Frigidaire Parts Distributor.

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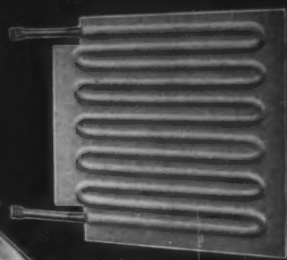
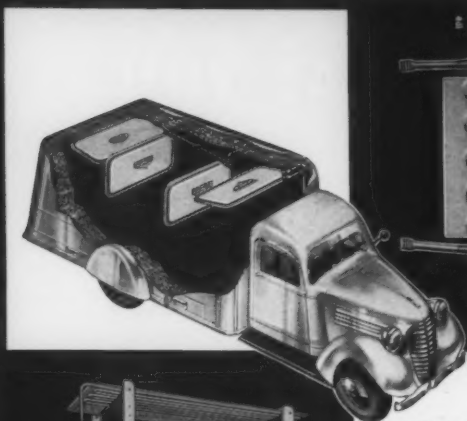
See your nearby Frigidaire Parts Distributor for a supply of these sales-building preparations. Or write Frigidaire Division of General Motors, Dayton 1, Ohio. In Canada, Toronto 13, Ontario.

Frigidaire



always specify, always use genuine Frigidaire parts

NOVEMBER, 1952 • COMMERCIAL REFRIGERATION



Serpentine Evaporator

"Hold-Over" Truck Refrigeration

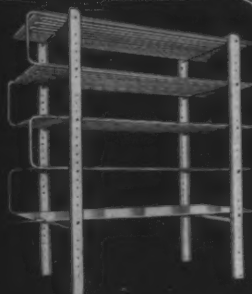


Plate Stand

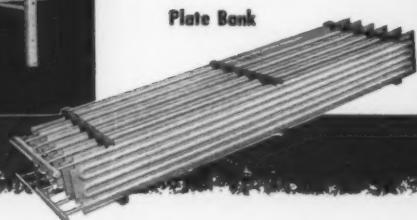


Plate Bank

KOLD-HOLD's efficient line gives you more for your money

There is a difference in the performance of Kold-Hold Refrigeration Plates that shows up in reduced operating costs. The difference is found in their greater efficiency . . . their ability to pull down larger loads, faster . . . using less power . . . at a lower cost to you.

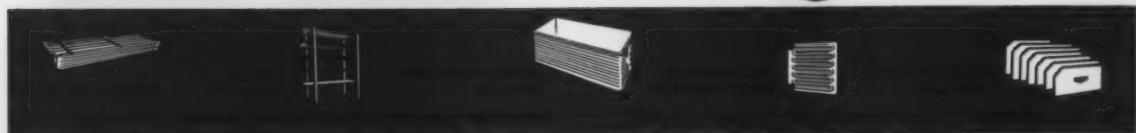
This efficiency is readily apparent in "Hold-Over" Plates that maintain dependable, low temperatures in truck bodies for as little as 10 cents a day. Operated off the existing plant cooling system or by a condensing unit mounted on the truck, they hold predetermined temperatures throughout

the longest day's hauls and reduce the cost of marketing perishable foods.

This efficiency is readily apparent in "Hold-Over" Plates for quick freezing, chilling and holding. These plates have the equivalent of 100% prime surface because the refrigerant flows in a continuous pass formed in the plate itself. There is no internal tubing or piping. This exclusive "Serpentine" design in individual Plates, Plate Stands and Plate Banks assures you more efficient refrigeration . . . less trouble . . . lower costs! Send for full details today!

KOLD-HOLD

protects every step of the way



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and AIR CONDITIONING • NOVEMBER, 1952

WE HAVE WHAT YOU WANT . . .

For years the industry looked for an automatic defrosting system for temperatures below 32° — and from the KRAMER Laboratory came the wanted answer . . . THERMOBANK. Now — eight years later — THERMOBANK stands as the unequalled Standard of the Industry. Refinements made over the years bring you now an even better THERMOBANK system. It is the system recognized experts specify — because it ensures maximum efficiency, minimum maintenance and lowest possible operating cost. You can't do better than . . .

THERMOBANK

WRITE FOR
BULLETIN R-124

by **KRAMER**

KRAMER TRENTON CO. • Trenton 5, N.J.

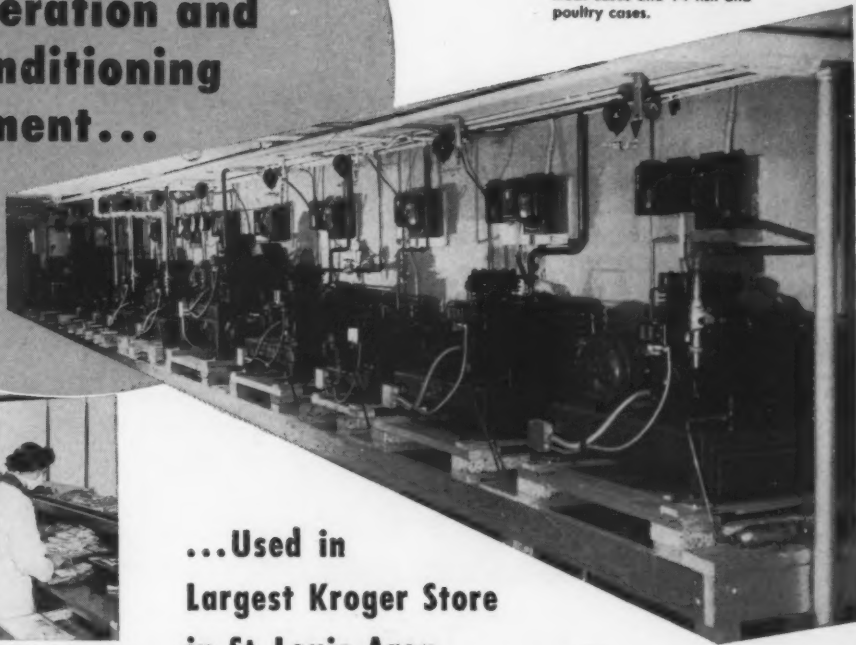
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NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

Curtis

Refrigeration and Air Conditioning Equipment...

Bank of eleven refrigeration units, ranging from 1/2 to 3 h.p. used to provide refrigeration for 66 feet of self-service meat cases and 14 fish and poultry cases.



Curtis packaged unit controls temperature and humidity in pre-packaging room.



One of five 5-ton air conditioning units used in the installation. Note small space used by compact cabinet.

...Used in Largest Kroger Store in St. Louis Area

Kroger's confidence in Curtis equipment is well-founded. Curtis equipment is built by a company with over 98 years of manufacturing experience.

With the broad Curtis line of Air Conditioning and Refrigeration equipment Curtis Distributors can make this type installation.

Curtis REFRIGERATING MACHINE DIVISION

of Curtis Manufacturing Company

1915 Kienlen Avenue • St. Louis 20, Missouri

Use Coupon
for Complete
Information

CURTIS REFRIGERATING MACHINE DIVISION

of Curtis Manufacturing Company

1915 Kienlen Avenue • St. Louis 20, Missouri

I am interested in direct factory franchise. Send complete details.

Company Name

Street

City

Zone

State

Signed

716

***Ice Cold Drinks
are on the House!***



The
**BISCAYNE
TERRACE
HOTEL**
in MIAMI

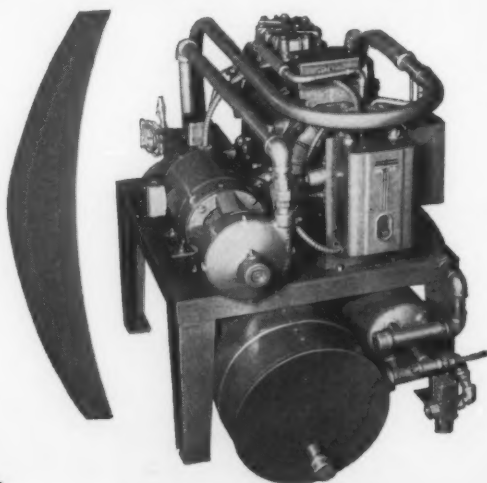
**— thanks to the *Acme*
FLOW-COLD* packaged liquid chiller**

The beautiful Biscayne Terrace Hotel in Miami, Florida has insured happier moments for its guests by the installation of a 5 horsepower Flow-Cold Liquid Chiller to provide chilled drinking water in all the 200 rooms and bubbler outlets in the lobby.

This installation becomes truly remarkable when you realize that the Flow-Cold servicing all these outlets is so compact that it takes up only twelve square feet of floor space and stands only three feet high.

You can provide the same degree of liquid chilling efficiency for your customers simply by specifying the Acme Flow-Cold Packaged Unit. It is the most versatile and compact unit on the market. It is being used successfully for air conditioning industrial coolant cooling, as a heat pump, or for solution cooling, as well as for chilling drinking water. Write us today for more complete information on the variety of duties the Flow-Cold can perform.

*Trade Mark



ACME INDUSTRIES, INC.,

JACKSON, MICHIGAN

Flow Cold Division

CONTINUOUSLY SERVING THE AIR CONDITIONING AND REFRIGERATION INDUSTRIES SINCE 1919
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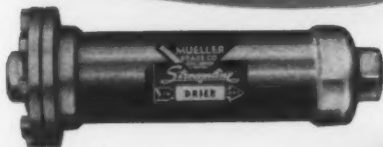
MUELLER BRASS CO. DRIERS do a thoroughly effective job of drying and filtering refrigerants

DELUXE—Drying agent sealed in at the factory—under strict laboratory control. Can be filled with any drying agent desired.



REFILLABLE—Just remove inlet plug and inlet screen tube, pour out old drying agent and refill. Replace tube and plug and it's ready for service again.

CARTRIDGE TYPE—Just remove flange cap from inlet end of drier and replace the old cartridge with new dehydrating cartridge which is completely assembled with filter and strainer unit. On side outlet model, cartridge may be replaced without breaking line.



There are Mueller Brass Co. driers available for every type of service. They keep the refrigerant clean and dry, remove the minute particles of foreign matter and they are safe and reliable wherever they are installed. Each of the three types of Mueller Brass Co. Driers shown here have these fine construction features:

Exclusive cone screen filter-strainer filled with chemically purified wool provides a filter area $5\frac{1}{2}$ times the area of a disc. This filter increases the working life of Mueller Brass Co. driers because it virtually eliminates clogging, insures free flow of the refrigerant at all times.

Husky forged brass ends are threaded and soldered to the heavy copper shell to provide an extra factor of safety.

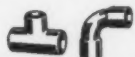
Wide wrench flats make it possible to get tight connections that stay tight.

A beautiful finish that makes an especially attractive installation in any system.

Mueller Brass Co. driers are available in sizes from $\frac{1}{4}$ " to $1\frac{1}{2}$ " outlets, and dessicant capacities from 3 cu. in. to 242 cu. in.



DRIERS AND FILTERS



WROUGHT COPPER FITTINGS



FLARE FITTINGS



LIQUID INDICATORS



VALVES



STREAMLINE refrigeration products are individual and multiple packaged for complete protection.

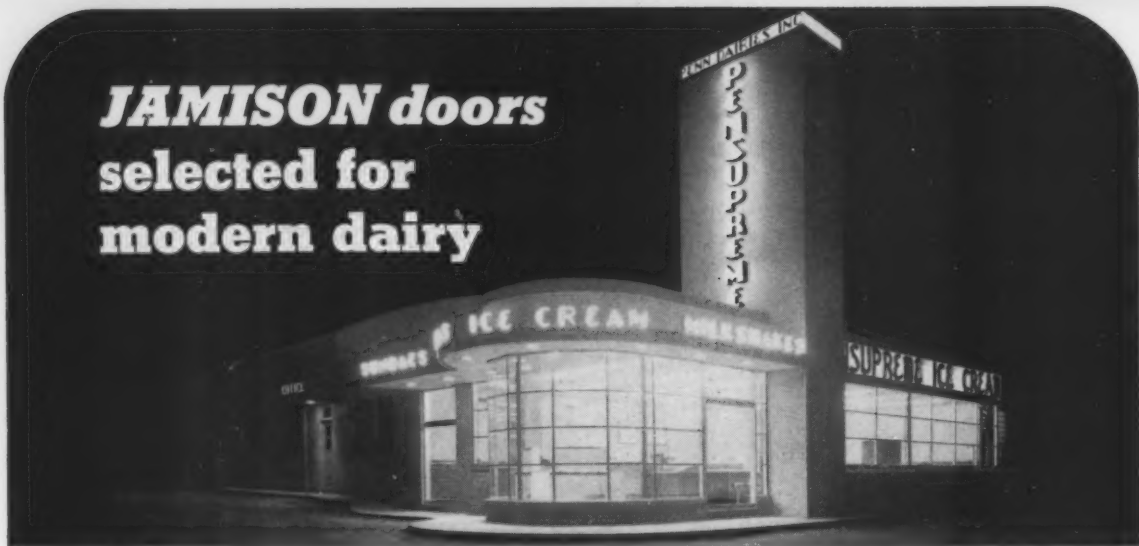


Write for catalog R-132 describing complete line of STREAMLINE Refrigeration products.

MUELLER BRASS CO. PORT HURON 12, MICHIGAN

Circle No. 27 on Reader Service Card for more information
and AIR CONDITIONING • NOVEMBER, 1952

JAMISON doors selected for modern dairy



Drive-In Dairy Restaurant Ice Cream Distributing Depot of Penn Dairies, Inc., Reading, Penna.



Ice Cream Hardening Room with fully metal clad Jamison Super Freezer door.



Kitchen Cooler equipped with two Jamison Standard Doors for easy access. Fully metal clad.



*For specifications and dimensions request Catalog No. 1.
Jamison Cold Storage Door Company, Hagerstown, Maryland, U. S. A.*

Circle No. 28 on Reader Service Card for more information

NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

DECIDE FOR YOURSELF!

... Compare **TEMPRITE**
with **ANY OTHER** liquid Cooler

EVERY TEMPRITE is supplied with an infinite pressure control valve. Assures perfect exit temperature... ALWAYS!

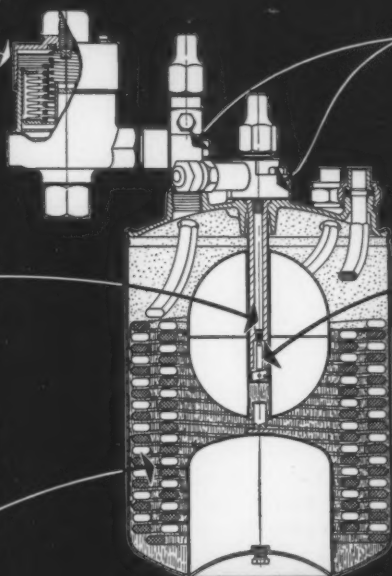
EVERY TEMPRITE is supplied with a liquid control float valve. No additional controls required.

EXTREMELY HIGH CAPACITY through exclusive patented principle! Cooling coils directly submerged in liquid refrigerant and heat transfer is instantaneous through a single wall only! (All coolers rated at 40° exit temperature, but lower or higher temperatures are available... without the addition of extra equipment.)

EVERY TEMPRITE is supplied with liquid and suction line shut-off valves, simplifying installation.

LOW-SIDE FLOAT CONTROL assures instantaneous reaction to load, and positive closing on off cycle... thus guaranteeing refrigerant flow proportionate to load requirement.

INSTANTLY COOLS water, carbonated drinks, beer, etc., etc. (Copper or stainless steel coils to suit.) Install at roadside stands, drive-ins, taverns, restaurants, fountains, amusement parks, etc. Widely used for industrial and commercial purposes such as photographic and process cooling, etc.



TEMPRITE PRODUCTS CORP. *Be right with Temprite*
P.O. Box 72-B, East Maple Rd.
Birmingham, Michigan

- ☐ Send me data on Temprite Instantaneous Coolers
☐ Ask your representative to call.

Name _____

Address _____ Zone _____

City _____ State _____



it's here!
it's amazingly
low priced!

it's the new
PENN "270" CONTROL
for single pole
refrigeration jobs

Now... for the first time... you can have the extra dependability, the unmatched features of the famous PENN Series 270 two-pole switch in SINGLE POLE construction.

Never before has so much been incorporated in one *single pole refrigeration control*! Look at these features. Direct-reading calibrated scale shows cut-in and cut-out points... no addition or subtraction, no waiting to check temperature or pressure, just set it and leave it. Mounting position or vibration does not affect calibration or accuracy of performance. Then, there's a sturdy contact mechanism with large steel-backed silver contacts having high current capacity without sticking. And there's more... much more!

Get the full story on the PENN Series 270 *single pole control*... the control which is so easy to install, so easy to adjust. Ask your wholesaler or write **Penn Controls, Inc., Goshen, Indiana**. Export Division: 13 E. 40th Street, New York 16, N. Y., U. S. A. In Canada: Penn Controls Limited, Toronto, Ontario.



Save money on polyphase applications with the PENN Series 270 two-pole refrigeration control. It's the most versatile control in the field... it's really two switches in one.

PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES

Circle No. 30 on Reader Service Card for more information

NOVEMBER, 1952 • COMMERCIAL REFRIGERATION



A SHADE OF WHITE that will be considered standard for the production of refrigerator parts made of polystyrene plastics has been adopted by the plastics industry in cooperation with refrigerator manufacturers, the Commodity Standards Division of the Department of Commerce reports. The problem of matching white plastic parts with the white porcelain enamel is a most important one, since (believe it or not) there are many different "shades" of white. Only a slight difference in appearance between the different parts in a refrigerator can cause the customer to balk—and the manufacturer, knowing this possibility, doesn't like it either. Adopting a standard shade, it is believed, will save both refrigerator manufacturers and plastic molders a great deal of costly experimentation—and the customer will be better pleased.

AIR CONDITIONING COMPETITION will be warmer next year. The run on room coolers that cleaned out manufacturers' stocks last summer opened the eyes of many appliance makers. International Harvester Co. will have three models of room conditioners ready next year. Servel, now producing commercial air conditioners, will move into the household market. Muntz TV and Cory Corp. have announced their entry into the field, and reports say that one of the nation's "big five" TV makers will announce a similar move soon. Sales of room conditioners topped 250,000 last year, and estimates put sales above 350,000 units this year. Room conditioners and TV sets sell for about the same price . . . apparently TV manufacturers look for a similar mass market in the room cooler field.

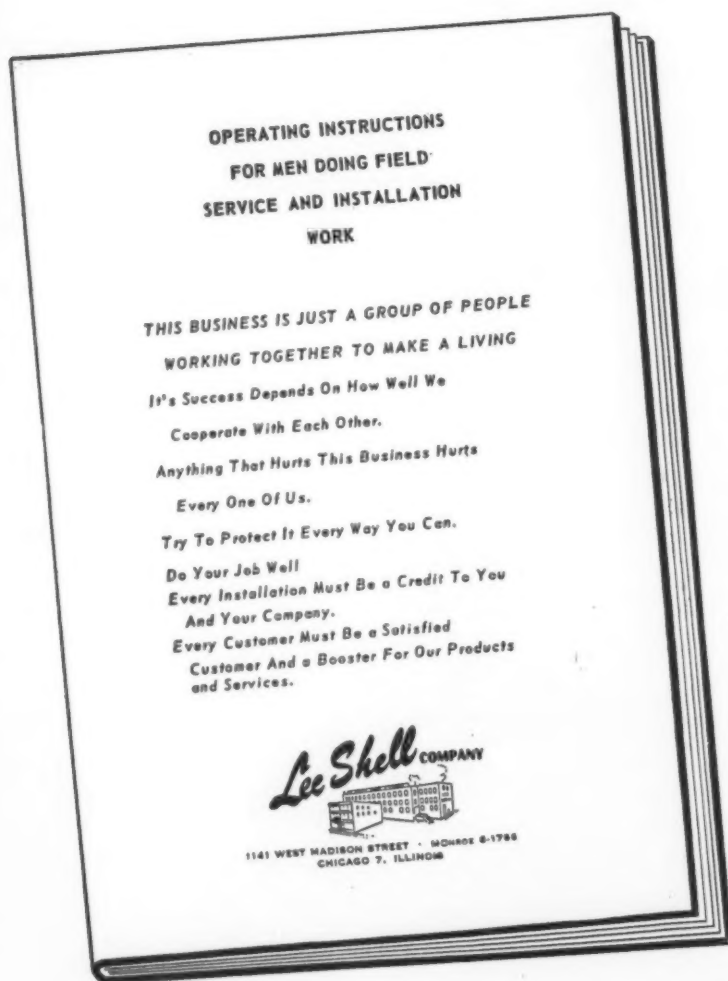
SOMETHING TO THINK ABOUT in connection with the application of ice cube making machines, presently gaining widespread popularity, is pointed out by a producer of water conditioning equipment. Concentration of scale-forming salts, this company warns, constitutes a serious problem for any type of equipment where water is constantly recirculated. The formation of ice serves as a concentrating mechanism. As the water is circulated in the machine, scale is continually built up in it, making the water actually thicken and appear whitish. Adding some means of arresting rust and scale formation will do much to lengthen the service of ice-making units, and needless to say will reduce maintenance calls appreciably, it is pointed out. Anyone see an opportunity for "add-on" sales here?

THE 158 MEMBERS of the National Association of Retail Grocers who also have frozen food lockers on their premises average 374 lockers each and 15.4 linear feet of frozen food display cases, according to a survey completed recently by NARGUS. The combined locker-grocery operators reported as follows on their sales of frozen foods: 100 per cent sold frozen juices; 97.9 per cent sold frozen vegetables; 95.7 per cent sold frozen fruits and ice cream; 93.6 per cent, frozen fish; 91.5 per cent, poultry; 48.9 per cent, meats; 42.6 per cent, pet foods; and 38.3 per cent, baked goods. One source of frozen food supplies was used by 54.3 per cent of the grocers, two sources by 32.6 per cent.

THE IMPORTANCE OF REFRIGERATION in keeping packaged commodities fresh is emphasized in tests reported recently by the U. S. Department of Agriculture. Apricots in sealed film will maintain satisfactory quality up to six days when stored at 40 F, but will develop bad odors and off-flavors quickly if held at 65 F. Newly harvested and cured packaged sweet potatoes can be held satisfactorily for four weeks at 55 F, but only two weeks at 70 F. Carrots packaged in some types of film can be held for six days at 70 F, two weeks at 40 F, and three weeks at 32 F. Onions, sweet corn and broccoli spoil quickly when packaged in film that is not ventilated with small holes.

Even a good mechanic can hurt a service business if he's careless about company regulations or customer relations, so this distributor impresses upon his men the fact that . . .

It's the Little



THE COVER of the 8-page educational brochure which Lee Shell Co., Chicago distributor of commercial refrigeration equipment, hands out to all its service personnel, points up the fact that the firm's success depends upon the activities and attitude of every employee.

SERVICE, in its fullest sense, doesn't begin and end with the repair of a broken compressor. A serviceman may know all there is to know about the technical aspects of his trade and yet be a definite liability to his employer because he fails to work harmoniously within the company organization or fails to render his services, however excellent mechanically, in a manner which creates customer good will.

With these facts in mind, Irving W. Shell, president of Lee Shell Co., Chicago commercial refrigeration distributor, determined to try to do something about this situation within his own service organization.

The result of his efforts was an eight-page booklet outlining in detail a program of recommended service department procedure. Theme of this booklet is set on the cover in a paragraph which reads:

"This business is just a group of people working together to make a living. Its success depends upon how well we cooperate with each other. Anything that hurts this business hurts every one of us. Try to protect it in every way you can. Do your job well. Every installation must be a credit to you and your company. Every customer must be a satisfied customer and a booster for our products and services."

The booklet's text centers on the theme that "it's the little things that count". The exhaustive list of "do's" and "don'ts" which it contains may sound elementary in many ways, but each point is based upon sound common sense and practical experience.

Every new serviceman hired by Lee

Things That Count

Shell Co. is handed a copy of this instruction booklet and told to study it. To make sure that he does, one of the company's executives spends a few minutes with him prior to the next service meeting in which he asks the new man questions pertinent to the booklet and tries to instill in him a spirit of cooperation.

At the service meetings, which are held at regular intervals, the company not only re-emphasizes the importance of the points covered in the booklet, but also stimulates discussion of any mutual problems arising between various departments of shop personnel.

Occasionally the company issues a special bulletin as a means of further promoting cooperation between all of the firm's various departments, and a sounder basis of employee-management relationship.

"We have had fair results with this program," Shell reports candidly, "although we have been forced to eliminate certain employees who just wouldn't cooperate. We are hoping that the continuation of this method of educating our employees with relation to customer service will help iron out the little details and trouble spots with which we are continually confronted in our type of operation. We do not believe that this system is a cure-all, but we do believe that it helps a lot."

Following is the complete text of the service orientation booklet:

1. **Do not work without a work order.**
2. **Have the customer sign a work order for all work done—and for all material.**

- a. If the customer objects to signing for incompleting work, tell him he can fill in what remains to be done.
- b. The proper way to request the customer to sign the work order is to say "Will you please mark in the time we finished work here and sign this work order for us."
- c. When you leave the job, you must have the customer sign for the work done and equipment left on the job.

3. Do only the work called for on the work order—and exactly as called for.

- a. Refer the customer to the store engineer who planned the job, or to your superior, if (1) additional work is desired, or (2) changes are desired.
- b. Do not suggest any changes in the work to the customer. If you think you know a better way to do the work than is called for on the plan, make the suggestion to Lee Shell Co. —*never to the customer.*
- c. Write out an order and have the customer sign it if he insists on your doing additional work or making material changes in the work called for on the work order. *Do not proceed with the work if the customer will not sign an order.*

4. Follow instructions exactly.

- a. Written suggestions for better methods are always welcome, but stick closely to the standard instructions until they are changed.

5. Install all equipment exactly as shown on plan.

6. When prospective customers inquire about work they would like to get done or equipment they are interested in, be sure to:

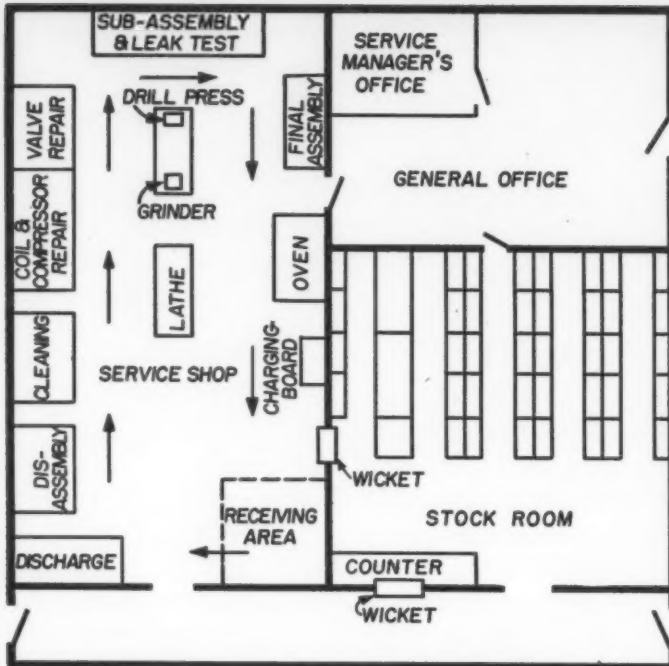
- a. Write down full name and address and what they are interested in.
- b. Turn over this information at once to your superior, or to the office or store engineer.

7. Do all possible to complete the work without making extra trips.

- a. If short of materials, telephone the office immediately and let us know what is required so it can be sent to the job, so the work will not be delayed.
- b. Make a list of all equipment remaining on job which belongs to the Lee Shell Co.:
 - take necessary steps to have this equipment returned to us.
 - attach list of equipment to signed work order. Take necessary steps to protect our equipment so it will not get damaged, lost or stolen before it is returned to us.
- c. Make a list of all unfinished work and attach it to the signed work order. On this list state:
 - what remains to be done.
 - exact quantities and sizes of materials needed to complete the job.
 - number of work hours needed to finish the work.

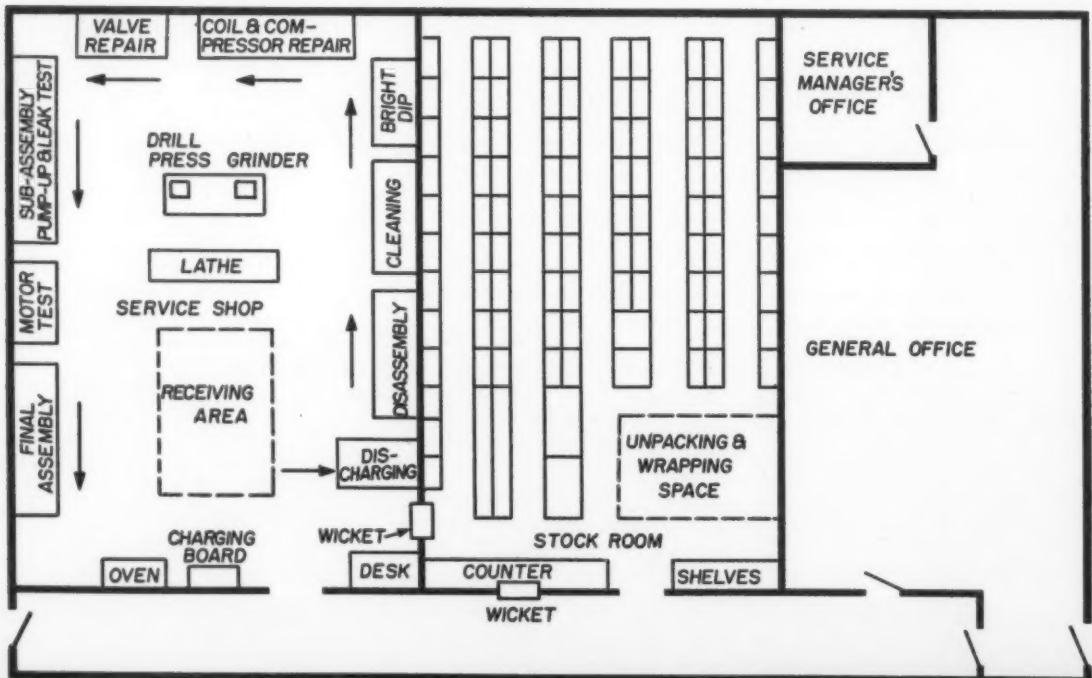
Continued on page 88

Plan Your Efficient



SMALL SHOP, doing installation and service work only, contains all of the vital facilities of any complete service shop but of necessity is more compact, with less space for work areas and parts storage.

LARGE SHOP follows same "production line" pattern to expedite flow of work through shop, but added space makes possible special facilities such as bright dip and motor test, plus much larger parts stock.



IN the service business, good shop facilities are a necessity, but "good" does not necessarily mean large. It means, rather, the most usable arrangement of the specific equipment required for any particular type of shop operation.

This, in turn, means a definitely proscribed area for each operation, with a specified place for tools, for equipment, and for material being held for work. It means, too—and this is extremely important—constant policing so that the shop mechanics can get into each area and use it, without falling over a couple of old "clunkers" that should be scrapped, or without spending 10 minutes or more clearing some cluttered bench space.

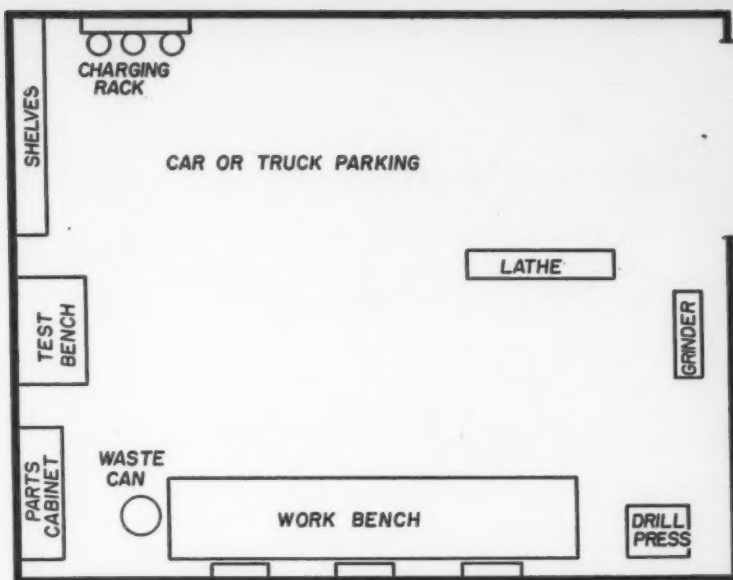
Shop For Production

Service shops have a decided tendency to "just grow", like Topsy, instead of being intelligently planned to fit the work being done. All too often this results in a confusing, inefficient jumble of operations, instead of an orderly, systematic, step-by-step, production line type of layout which could make possible the handling of more work at lower prices and greater profit.

At least once a year, preferably when the budget is being prepared, the head of each service business should take a good look at his shop operations to determine just what type of work is profitable and what work might be profitably added.

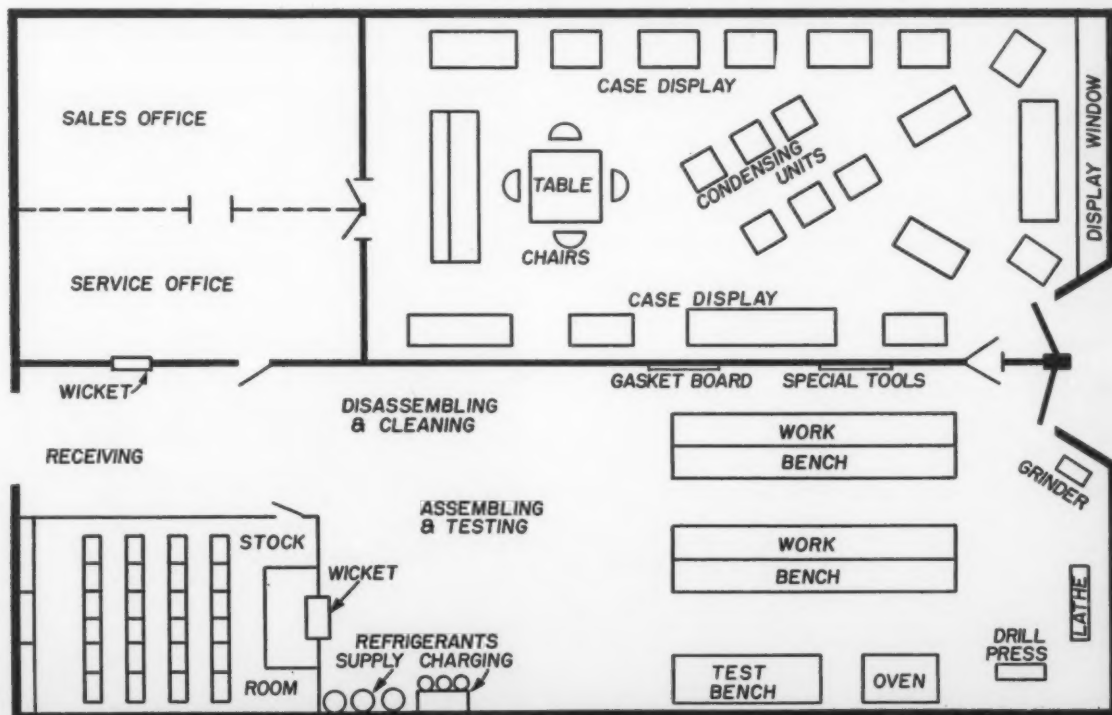
The shop itself should be closely

Continued on page 57



GARAGE SHOP is the most common starting point for servicemen going into business for themselves, as it provides room for housing the service car or truck as well as the basic shop facilities. Obviously the limited space available precludes anything but the simplest parts stock, other supplies being picked up from the wholesaler as needed.

SALES AND SERVICE operation requires both shop and showroom space, duplicate office facilities. Service facilities should be given as much prominence as sales. A clean, efficient, and well-kept service shop will attract more service business. Office space doesn't have to be fancy; let the shop itself do the selling if you want results.



This Equipment Is a 'Must' for Even Small Shops

SELECTION of the proper equipment for any service shop depends upon a number of variables—the size of the shop itself, the type of work which it is expected to handle, and the financial condition of the operator.

Some small shops, operating in larger communities where there is easy access to sources of parts supply and to such auxiliary services as compressor overhaul and motor repair, contain relatively little in the way of major shop equipment.

On the other end of the scale are those large and completely equipped establishments which are prepared to handle absolutely any job for their customers, from the replacement of the simplest valve or control to the rebuilding of hermetically sealed condensing units and the complete repair of electric motors.

The great majority of refrigeration and air conditioning service shops across the country fall somewhere in between these two extremes.

In these on-the-scene shots, actually taken in operating shops where all types of commercial refrigeration and air conditioning equipment was undergoing repair, we have tried to illustrate some of the more common basic types of machinery and equipment with which every complete service shop should be equipped.

While virtually all of this equipment is available in commercial form, much of it is of a special nature and may be built up or adapted by the service operator to meet his shop's particular needs.



LATHE—One of the three basic power tools needed for any complete service shop. Especially useful for turning down motor commutators or cutting open hermetics.

WELDING EQUIPMENT—Extremely useful for silver brazing work or for resealing domes of rebuilt hermetic condensing units. Mounted on a hand truck it can be portable.





DRILL PRESS—Invaluable for drilling out broken studs, preparing new mounting brackets for rebuilt compressors, or new holes for motor mountings.



GRINDER—A general purpose utility tool which performs the important function of keeping your hand tools sharp as well as grinding down small parts.

For more pictures of shop equipment, turn the page ►

AIR COMPRESSOR—Designed primarily for blowing out plugged lines and cleaning small parts. Also can be used as air supply for spray painting equipment.



LEAK DETECTOR—Needless to say this is a "must" in any service shop, for the locating of leaks is one of the most important jobs in repairing and rebuilding units.





CLEANING TANK—Thorough cleaning and de-greasing is important for all parts of disassembled compressors. For small parts, use container with screen bottom.



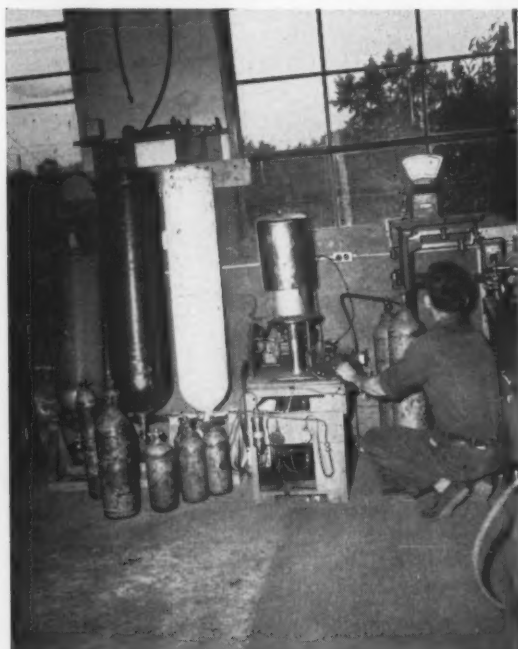
CHAIN HOIST—Here is a valuable piece of equipment which takes the back-breaking labor out of loading and unloading heavy equipment.

(Continued from preceding page)

DRYING OVEN—One of the most important pieces of shop equipment, if condensing units are being reconditioned. Bakes moisture out of units and components.



CHARGING RACK—An essential item in every shop to insure the charging of a correct amount of oil and refrigerant into repaired units.

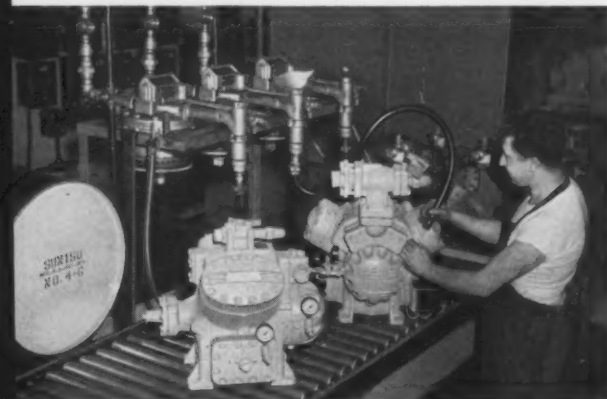


MANUFACTURERS' CHOICE OF SUNISO PROVES IT BEST FOR SERVICEMEN

Their Technical Staffs Have Confirmed the
"Job Proved" Quality of Suniso Refrigeration Oil



A 10-YEAR TEST of two compressors run on Suniso Oil was recently completed by an important maker of domestic compressors. Careful examination showed all cylinders, connecting rod bearings, pistons and valves to be good as new after approximately 80,000 hours' operation. And no gum or sludge had formed.



SUNISO ENDS SUBZERO WAXING. Several years ago one of the leading companies making large industrial compressors found that its refrigeration oil was "waxing out" at low temperatures. It then ran tests on a variety of competitive oils. Its exhaustive, laboratory analyses proved that when used with Freon, Suniso had a lower wax separation point than any other oil. The company has used Suniso for eight years with complete satisfaction.



**Genuine Suniso is available
to the service trade
through authorized
Kelvinator Dealers, and
wholesalers supplied by
Virginia Smelting Company**

SUNISO REFRIGERATION OILS

SUN OIL COMPANY, PHILADELPHIA 3, PA. • SUN OIL COMPANY, LTD., TORONTO AND MONTREAL



Spray Painting Equipment —

A Handy Addition to Your Shop



SELF-SPRAY FINISHES are ideal for touching up nicks and scratches on commercial refrigeration or air conditioning equipment. Damage such as that shown above often occurs in transit or installation. Self-spray containers eliminate bulky and costly equipment, make it possible to do touch-up work on the job.



FIRST STEP in touching up any damaged area is to protect any contrasting trim with regular masking tape. Marred area should be sanded to feather edge with very fine sandpaper so as to facilitate blending of new finish with old. If entire panel is to be refinished, complete surface should be sanded.



PREPARE SPRAY CONTAINER for use. If it has removable spray head, screw head firmly to container. Shake container well to mix paint. Before spraying area to be refinished practice spraying on a piece of newspaper or some similar surface to get used to touch of fingertip control and technique of spraying.



WHEN SPRAYING, hold can 10 or 12 inches away and cover area with a series of light overlapping strokes, stopping after each stroke. Build up as many coats as required, but allow enamel to become tacky between strokes to prevent sags and runs. Allow enamel to harden for about three hours, then finish off surface with rubbing compound.

Facilities

SPRAY-painting equipment, properly employed, can prove to be one of the handiest additions to any service shop because of the variety of uses to which it can be put.

It can be used to completely refinish old cases and cabinets or to touch up new equipment that has been damaged in transit or upon installation.

It can be used for "color coding" pipes and lines so that each may be quickly and properly identified.

It can be used for painting accessory equipment to match the color of the original unit.

It can serve for repainting compressors, condensers, or other equipment which may be brought into the shop for repair or reconditioning.

Most common and most versatile of all spray painting equipment are the "packaged" or "self-spraying" cans of aerosol-propelled paints and enamels available in virtually every color and shade. Produced and sold in pressurized containers using Freon-12 as the propellant, these special finishes are compatible with Freon and are packaged in such a way as to create a constant pressure in the container of 35 p.s.i. at 70 F.

Prime advantage of these self-spray paints is that they enable the user, skilled or unskilled, to get professional results with a minimum of time and effort. What's more, they eliminate the need for brushes, hoses, air compressors, spray booths, or other expensive and bulky equipment. They are completely portable, permitting refinishing or touch-up work on the job as well as in the shop.

Also, costs of refinishing operations can be reduced through use of

Continued on page 103

Build Your Net Profit With a Full Parts Stock

EVERY service operation has an obligation to its customers to back its shop facilities and service personnel with an adequate supply of replacement parts. On the basis of extensive surveys made among members of its own dealer organization, Carrier Corp. has come up with a number of practical, experience-proven recommendations as to how such a service parts department should be organized. A summary of these suggestions follows.

A high percentage of any service department's net profit comes from parts sales, and the cost of carrying even the most complete parts stock will not seriously reduce this profit.

Gross margin to the service dealer on parts sales is generally high enough to take care of an annual turnover as low as .75. In other words, the parts sales of the service firm might be only three-quarters of the value of parts normally carried in stock. The comparison is best made on a cost basis.

An "adequate parts stock" may be loosely defined as a stock of items used at least once a year, plus any additional parts needed to meet common but unpredictable emergencies. The nature and scope of this stock can best be decided upon after a thorough study of past operating experience.

Once an adequate parts stock has been acquired, it should be maintained and developed through some method of inventory control. Only an inventory control system can reveal the proper amount of each item to carry, indicate new items necessary, and eliminate unneeded material.

The purpose of an inventory control system is to extract the maximum possible profit from a parts stock, with the minimum amount of labor and expense.

Such a system should, as routine, maintain an adequate stock with no excess quantities or unsalable items. It should indicate the best source of supply, last cost of each item, order quantity, order point, and usage. In order to do this, the inventory control must be the definite responsibility of some one person.

For small operations, a simple visual system is sufficient. This, however, requires good bins and a compact parts area so that virtually every part is seen everytime any part is handled.

In such operations it frequently occurs that only one unit of any particular part is carried, so the simplest record keeping system is a stock tag that can also be used as a bin card. No entries except cost or price need be changed on these tags.

A supply of tags and a drop box should be located near the bins. When the order point of an item is reached, the stock tag (or a duplicate of it) would be dropped in the box. Once a week orders should be placed to cover the accumulated tags.

At least quarterly the entire stock should be checked and orders placed for any shortages or new items to be carried. Unsalable material should be scrapped and excess quantities returned to the vendor.

A very substantial stock can be handled in this manner, but if more than four servicemen are involved the system usually fails, due to divided responsibility. One way of extending the usefulness of this

Continued on page 64

8 Easy Ways to Improve Your Brazing Technique

How To

by A. W. Swift

Engineering Division
Hendy & Harman

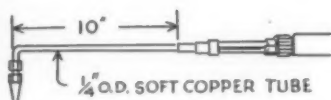


Fig. 1

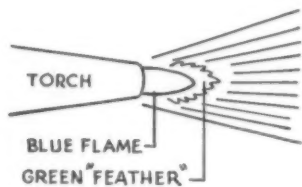


Fig. 2

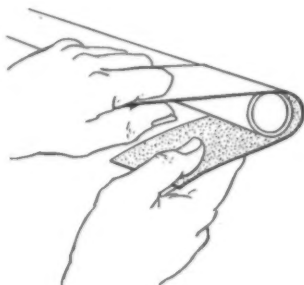


Fig. 3

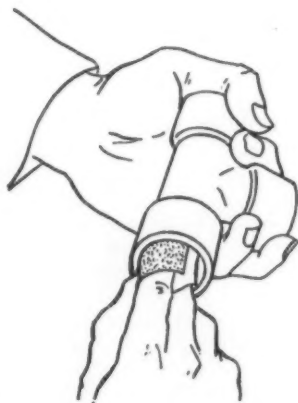


Fig. 4

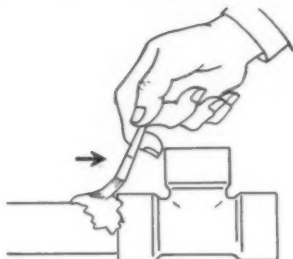


Fig. 5

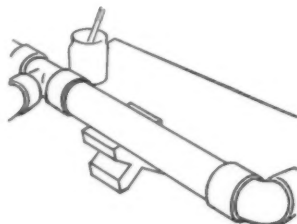


Fig. 6

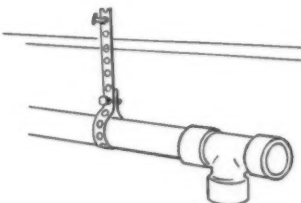


Fig. 7

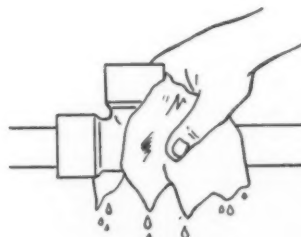


Fig. 8

PROPER silver brazing methods are an extremely important factor in the performance of satisfactory refrigeration and air conditioning installation and maintenance work. In this connection, it should be pointed out that the term "silver brazing" means exactly the same thing as the old term "silver soldering".

As most refrigeration service engineers know, there are two general types of silver content brazing alloys.

One type is the silver, phosphorus, copper content alloys which range from 5% silver up to 15% silver. The use of these alloys is restricted to the brazing of copper to copper or copper to brass. These alloys are not recommended for joints to steel or stainless steel.

The silver phosphorus copper alloys have some slight advantage in the brazing of copper to copper in that no flux is necessary when the joint area is clean to start with. In the joining of copper to brass, a good standard silver brazing alloy paste flux is necessary.

The other type of silver content brazing alloy frequently used in refrigeration work contains a far higher percentage of silver, the more common varieties containing either 35, 45, or 50% silver.

These are all low flow point general purpose silver brazing alloys that work well on copper, brass, Monel, nickel, steel and stainless steel. A good silver brazing flux is necessary with all three of these alloys on all the metals mentioned.

There are two sources of heat generally used in making joints in re-

Do Better Silver Brazing

refrigeration installation or repair work. On small installation or repair jobs where the tubing is not larger than $\frac{3}{4}$ " the large Prest-O-Lite torch tip will work out very conveniently. On the other hand, if you have contracted for the installation of a large air conditioning system, you will undoubtedly want to use a portable oxy-acetylene outfit.

Always try to obtain a flexible extension to the torch (Fig. 1) and use a bulbous or multi-flame tip. It always pays to use a reducing flame on the oxy-acetylene tip (Fig. 2).

Although refrigeration service engineers in general are quite familiar with the fundamentals of making up a tight, strong silver brazed joint, we feel that it might pay to review the six basic fundamental steps.

6 Steps to Good Brazing

1. A good fit and proper clearance in the joint is very important. This is generally found in the common tolerances in the brass or copper fittings and the copper tubing. If the tubing or fittings have been knocked out of round, a sizing tool should be used to bring them back into shape.

2. The necessity of cleaning all dirt, grease, and oxide off both the end of the tubing and the inside of the fitting is very important (Fig. 3 and 4).

3. The fluxing of refrigeration joints varies from the normal complete fluxing procedure followed on piping used for water or other fluids. In refrigeration work, it is quite common practice to partially insert the tube into the fitting and then paint the tube around the end of the fitting with the paste flux and push the fitting into place.

If this cannot be conveniently done, then it is common practice to

thoroughly paint the flux around the end of the fitting and on the tubing after assembly (Fig. 5). It is wise to avoid getting any of the flux into the refrigeration system.

4. If you are brazing parts in position be sure that they are supported so that there is no strain or sag in the joint area. It is not good for the joint to sag or move during the brazing operation (Fig. 6 and 7).

5. The standard procedure for heating all tubular joints is to keep your heat moving around the tube above the fitting so as to heat the tube and expand it more tightly into the fitting. Once you begin to see a little color in the copper you can then remove the heat down on to the fitting and move it back and forth until the flux is completely fluid.

One of the general purpose higher silver content alloys flows very freely at 1145 F, and shortly after your flux is clear as water in the joint area you can touch this alloy to the joint and see it flow around your complete joint area.

If you are using one of the silver phosphorus copper alloys, you will have to increase your temperature nearly 200 degrees (you can judge the heat by the red appearance of the metal) before this alloy will flow into the joint. You will have to touch this alloy all around the joint as it does not flow as freely as the others.

6. After you have completed the heating operation and have seen the brazing alloy flow completely around and into the joint, you can most easily remove the flux from the joint area by using a wet rag or brush (Fig. 8). The water tends to crack and dissolve the flux on the hot tubing.

In most installation or repair jobs it is a great help to be able to braze up sub-assemblies of tubing on a work bench so that the parts can be

tipped in such a position that you are brazing downhill. Every joint that you can make in the down position will be in your favor as gravity helps pull the brazing alloy into the joint.

On most installation work, the most common joint will be a horizontal one in position. There are two schools of thought on the best way to make a good silver brazed horizontal joint.

Two Methods Available

Regardless of which method you may use, it always pays to start off by heating the tube so as to be sure that it is thoroughly heated and expanded into the joint. When the flux comes up to the fluid condition, some operators start on the bottom, supplying a little alloy to the bottom and watching it sweat in. Next they work up on either side of the joint, pulling the heat away to let the alloy freeze so that it does not all run to the bottom. They then finish by touching their alloy on the top of the tube next to the end of the fitting and sweating it there, being sure that previously applied alloy on the sides is molten so that the entire joint is tight.

Another method of applying brazing alloy to horizontal joints is to apply the alloy on the top of the joint on the start and then pull the heat back and let it solidify. After that, you go down on one side of your horizontal joint and then down the other, ending at the bottom, being sure to throw the heat back and forth along the bottom of the joint to pull the alloy into the joint area.

On tubular joints $\frac{1}{2}$ " in diameter or smaller it is common practice to touch the alloy on the top. Then, by the motion of your heat back and forth from the fitting to the tubing, you can cause it to melt and flow

Continued on page 99

Are these tube tools...



... tube cutter



... lever-type bender



... swedging tool

Good Tubing Proper Use of

by G. E. Franck

Director of Engineering
Imperial Brass Mfg. Co.

NO REFRIGERATION system is better than the tubing lines which link its various components.

Regardless of how efficient a condensing unit may be, how accurately an expansion valve may feed, how well designed the evaporator may be, or how precisely the controls operate, if the installation of the tubing is not up to par, serious difficulties will be encountered in the operation of the system.

In all types of tube installations there are five basic operations to be carefully considered and for which tools should be provided:

(1) Cutting; (2) Deburring; (3) Flaring; (4) Bending; (5) Sweating.

Accurate, square cuts can be made with commercial tube cutters. Cutters having rollers are preferred. These rollers alleviate some of the pressure and allow for easier operation. To further relieve the stress of cutting, particularly with hard-drawn tubing, cutters are also available having a ball thrust bearing incorporated into the feed mechanism.

Tube cutters are available having a flare cut-off groove in the rollers. This permits removal of a faulty flare directly at its base—a point very important where lines are closely dimensioned. The replacement of a line is often avoided by using the cut-off groove. The amount of cut-off burr can be held to a minimum if the cutter is fed with just enough pressure to operate.

A new type cutter has recently been developed to accommodate the larger diameter tubing. This cutter incorporates a quick adjustment mechanism that allows quick and easy adjustment of the feed mechanism over its entire range of $\frac{3}{4}$ " O.D. to $2\frac{1}{4}$ " O.D.

Work Requires Proper Tools

Most cutters are equipped with deburring devices or reamers, some retractable and other solidly integrated. The precision-ground tool steel retractable types are generally preferred because of safety factors which minimize the possibility of bodily injury and the easier handling of the cutter when the reamer is not in use.

Flaring tools have been developed recently to cope with the modern refrigerants and higher pressure systems.

Very minute leaks have been traced to a flare that visually seems perfect. However, scrutiny through a microscope divulges minute imperfections. These imperfections may have been originally in the inner wall of the tubing or created through the cutting and deburring operation.

Failures have also occurred at the base of the flare, where the joint was subject to vibration. This has been established as due to serrations caused by the flaring tool clamping bars. Flares made in conventional flaring blocks, wherein they are formed against the block, are often found as contributing to failure. Here it is possible for the operator to apply undue pressure on the flare in the process and cause it to "iron out."

The newer tools are devoid of serrations and provide for the forming the flare above the block—a combination that eliminates iron out and failure at the critical point.

In addition, these tools are provided with a novel, specially faced 45-degree cone, hard chrome-plated, and used in conjunction with a lost-motion burnishing operation. The burnishing that automatically takes place upon the retraction of the screw insured a one hundred per cent smooth surface on the flare.

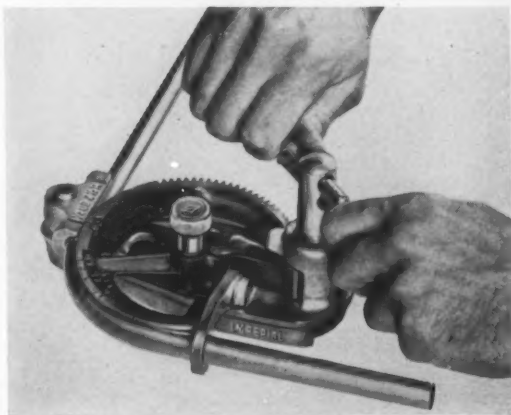
A slight cost-differential exists between the conventional and precision-type tool. However, the fact must be borne in mind that with labor at a premium and refrigerant at its current high cost, one leak caused by a faulty flare would overcome the difference in cost to the operator several times over.

Continued on page 72

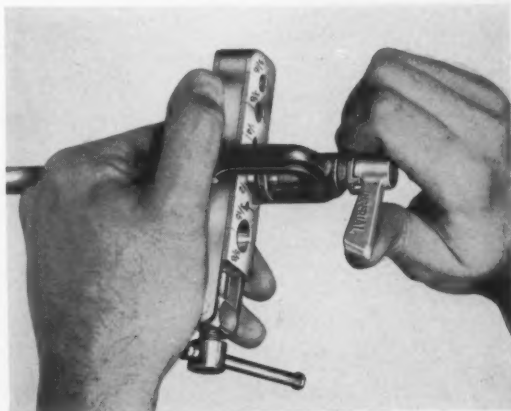
... in your service kit?



... inner and outer reamer



... gear-type bender



... flaring tool



*-Coolants
can't get out!*

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Because Chase Tube is *Extra Soft*, it can be easily bent and flared. It comes to you clean, bright, dry and oxide-free with sealed ends to keep out moisture, dirt and air.

Send for FREE Chase booklet giving suggestions for uncoiling, cutting, reaming, burring, flaring and other information on Chase Extra Soft Copper Refrigerator Service Tube.

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Circle No. 31 on Reader Service Card for more information

NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

Check this list...

... before you read the accompanying article. It is a suggested list of basic hand tool requirements for the practicing refrigeration or air conditioning serviceman. How many of these tools are in *your* kit?

3/8" SQ. DRIVE SOCKETS AND ATTACHMENTS

Extension, 6" long
Extension, 12" long
7/16" Double Hexagon Socket
1/2" Double Hexagon Socket
9/16" Double Hexagon Socket
5/8" Double Hexagon Socket
11/16" Double Hexagon Socket
Reversible Ratchet, 7" long
Sliding "T" Handle, 8" long

DOUBLE OFFSET BOX WRENCHES

3/8" & 7/16" Short Type, Double Hexagon Opening
1/2" & 9/16" Short Type, Double Hexagon Opening
5/8" & 11/16" Short Type, Double Hexagon Opening

COMBINATION WRENCHES

3/8" Openings 9/16" Openings
7/16" Openings 5/8" Openings
1/2" Openings

RIGHT ANGLE WRENCHES

3/8" & 7/16" Openings
1/2" & 9/16" Openings
5/8" & 3/4" Openings
13/16" & 1" Openings
7/8" & 1-1/8" Openings

TUBE BENDERS

For 1/4", 5/16", 3/8", 7/16", 1/2" and 5/8" Tubing

PLIERS

Pocket Size, Composition Handle, 2" blade
Electricians', Composition handle, 3" blade
Round Shank, Composition Handle, 4" blade
Round Shank, Composition Handle, 6" blade
For Phillips Screws Nos. 5 to 9 inc.
For Phillips Screws Nos. 10 to 16 inc.

MISCELLANEOUS

Flaring Tool for 1/4", 5/16", 3/8", 1/2", 5/8" tubing
Flare Nut Wrench, 3/4" & 1" opening
Flare Nut Wrench 7/8" & 1-1/8" openings
Tube Cutter for tubing from 1/8" to 1" O. D.
Handy Holding Tool, 6" reach
Hack Saw Frame, takes 6" x 1/4" blade
Ball Peen Hammer, 1/2 lb. Head
Shop Knife

Good Hand Tools—

an investment in
better service work

by E. S. Sensenderfer

Bonney Forge & Tool Works

TOP grade tools won't make you a better service mechanic—but they *will* help you do a better, quicker job, and take a great deal of the "cussedness" out of your daily work.

If you have spent the money and taken the pains to assure yourself of top grade tools, simple common sense will dictate that you use them properly and take good care of them. To this end we present on the following pages an illustrated series of nine practical pointers on the use and care of hand tools.

But before you turn the page, we should like to make a few general comments on this same subject.

Good tools may cost more money at the outset, but actually they are no more expensive in the long run, for they will last longer and do a better job for you—provided, of course, that you use and care for them properly. This means that you won't have to replace them as often, and the money from your tool budget which would normally go for this replacement can be used instead to equip yourself with additional special tools which you may need or want.

Refrigeration service demands a delicate balance in tools. Some are needed to make adjustments so fine that virtual "fingertip" control is required. Others are required for making connections where large flange nuts must be drawn down securely to prevent leakage, or where nuts are so firmly seated that they must be "broken" loose. For this reason, the importance of the proper tool for the proper job cannot be stressed too strongly.

Personal safety is another important factor which underscores the importance of buying only high quality tools, sizing them properly for the job, and keeping them in good condition. A wrench that slips because it is battered or a misfit can mean a painful bruise, a bad cut—or even a broken hand.

For practical pointers on
handling hand tools, turn the page



9 do's and don'ts for the *Care and Use of Hand Tools*

1

Never lend your tools. Even if they do come back, the other fellow has nothing to lose if he misuses them.



2

Don't leave tools lying around on various parts of the job. Keep tools and your kit in sight. When this is not practical, lock your kit and keep necessary tools with you. Tools have a habit of "walking away".



3

Make a habit of "mind-checking" the tools you've used on a job. There will be fewer left behind. You'll be surprised how soon this becomes "second nature".



4

Never "up-grade" a tool. If you have a "toughy" to break loose, use the heaviest rated tool you have to correctly fit the particular application.



5

Never use a pipe or "cheater" on a tool. Try penetrating oil first. If this doesn't work, use a chisel for bolts and nuts and a hardwood block and light sledge for flywheels and gears where practical.



6

Remember that you are working around corrosive elements. Keep a greased cloth handy in your kit and before replacing tools give them a quick wipe-off, especially on the "business" or working surfaces.



7

At least once each month dump the entire contents of your kit. Wash each tool clean with kerosene. Remove rust spots, if any, with crocus cloth or the finest emery, then wipe them with an oiled cloth.



8

Get rid of everything in your tool kit that might collect moisture. If your kit is subjected to "in and out of cold room travel" which induces condensation, a small bag of silica-gel or a similar absorbing agent will help considerably.



9

Stick to practical tools. Leave the gimmicks and gadgets for the other fellow. Remember, such tools are made to catch dollars—not to do a long-service job for you.



PROBLEM: How to Help Fountains BEAT Rising Costs and Ceiling Prices?



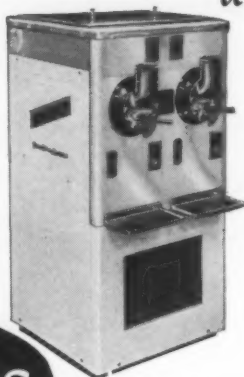
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NEWS OF THE INDUSTRY

MC CLOUD RESIGNS AS REWA SECRETARY

Harold S. McCloud, executive secretary of the Refrigeration Equipment Wholesalers Association for the past eight years, has tendered his resignation from this office effective Jan. 1, 1953. His resignation has been accepted by the directors of the association "with reluctance and regret".

McCloud leaves REWA headquarters in Cincinnati, Ohio, with the intention of taking up residence in Miami, Fla., where he plans to back into the refrigeration business if favorable connections can be made in that area.

A committee composed of B. V. Blazer, N. K. Mason, R. W. Sheperdson, and J. S. Kimmel has been charged with the responsibility of procuring a replacement for McCloud as REWA's executive secretary, according to an announcement by F. V. Wilson, REWA president.

McCloud has spent 30 years in the refrigeration industry. During 10 years with Frigidaire he served successively as office manager, service and installation manager, and district sales supervisor. Following a year spent as an independent field engineer on special assignments, he organized a wholesale refrigerator parts department for Williams & Co., Pittsburgh, in 1934, and served as its manager for 11 years.

While with Williams, McCloud helped to organize REWA at Detroit, Mich., in 1935, and served as first president of the association. He also was a member of its board of directors for nine years.

In addition, he was one of the organizers and a charter member of the Pittsburgh chapter of Refrigeration Service Engineers Society.

HERE'S SITE OF MIAMI MEETING



INDUSTRY INTEREST next month will center on Miami's municipal auditorium, where the 10th Refrigeration and Air Conditioning Educational Exhibit and Conference will be held Dec. 5 to 7. See page 54 for a complete story of the Conference schedule and the educational program.

A. A. FEINBERG DIES; USAIRCO PRESIDENT

Albert A. Feinberg, president of United States Air Conditioning Corp., Minneapolis, died Oct. 8 in Mt. Sinai Hospital there. He was 59 years old, and was one of the founders of United States Air Conditioning Co. 30 years ago.

"VIRGINIA" TO SELL CHEM. SOLVENT LINE

Frank Philabert, of Chemical Solvent Co., Birmingham, Ala., recently announced the appointment of Virginia Smelting Co. as national distributors for their line of refrigeration and air conditioning cleaners. Negotiations for Virginia Smelting were handled by Rollin H. Isreal of that company. Virginia Smelting will handle sales for the entire United States, with the exception of the Southeastern states. These states will be retained by Charles W. Gilliam and W. L. Bankston, long-time representatives of Chemical Solvent Co.

MUNTZ PLANS LINE OF ROOM COOLERS

Earl W. Muntz has resigned as president of Muntz Car Co. to devote his time to Muntz TV, Inc. and its new activity, manufacturing and selling room air conditioners.

The new air conditioning units in one-half, three-quarter, and one ton sizes will be marketed through the company's factories to consumer sales outlets on the same basis as television receivers. A factory with 45,000 square feet of space was recently acquired in Evanston to make the air conditioning units.

WOLVERINE SALES OFFICES MOVED

Sales offices of the Wolverine Tube Div. have been moved to Des Moines, Iowa, from Rockford, Ill. This move was announced by E. J. Campbell, midwestern district sales manager for Wolverine, from his Chicago headquarters. The new offices are located in Room 1221, Savings & Loan Bldg.

KEROTEST BOUGHT BY TUBE TURNS, INC.

Arrangements were completed recently for the acquisition of all of the common stock of Kerotest Mfg. Co., Pittsburgh, by Tube Turns, Inc. of Louisville, Ky. The new management will take over the operation of the plant immediately.

Kerotest Mfg. Company will continue to be operated under its own name and present officers and personnel have been retained.

New officers will be George O. Boomer, chairman of the board; John G. Seiler, vice president; Robert J. Landolt, vice president, all of Tube Turns, Inc. Walter G. Swaney, incumbent vice president and secretary and J. D. Isaacks, vice president of Kerotest, remain in the same capacity. The presidency will be filled at a later date, the new management states.

Directors will consist of Messrs. Boomer, Seiler and Landolt of Tube Turns, Inc. and John D. Dupuis and R. W. Mueller, Sr. of the former Kerotest board.

The purchaser, Tube Turns, Inc. has been located in Louisville since it was founded in 1927 and produces welding pipe fittings, flanges and special forgings.

EARL VALLEE LEAVES A-P CONTROLS CORP.

A-P Controls Corp. has announced the retirement of Earl A. Vallee as an officer of the company.

Widely known for his activities in the heating and refrigeration fields, Vallee joined A-P in 1935 as sales manager. For the past 10 years he has been executive vice president of the company.

PLANS COMPLETE FOR MIAMI EDUCATIONAL CONFERENCE DECEMBER 5-7

Factory experts of 72 companies will gather at Miami next month in connection with educational displays at the 10th Refrigeration and Air Conditioning Educational Exhibit and Conference. The exhibits and conference will be held in the Miami Municipal Auditorium on Dec. 5, 6, and 7.

The conference is being sponsored by the Refrigeration Equipment Manufacturers Association and the Refrigeration Service Engineers Society with the cooperation of the Refrigeration Equipment Wholesalers Association and the Refrigeration and Air Conditioning Contractors Association.

Exhibits will be open to anyone in the industry during the following hours:

Dec. 5—1 to 5 and 7 to 10 p.m.

Dec. 6—10 a.m. to 5 p.m.

Dec. 7—12 noon to 4 p.m.

Speakers who will appear on the three-day program together with their subjects include the following:

"Installing a Window-Unit Air Conditioner", Carl F. Zauner, service manager, Remington Corp.; "Estimating and Installing Residence Air Conditioning", Lee A. Miles, refrigeration engineer, Mueller Furnace Co.; "Facts About Driers—Old and New" Dr. W. O. Walker, director, industrial chemical Research, University of Miami; "The Lithium Bromide Absorption Refrigerating System", John E. McGaughy, Jr., field engineer, Carrier Corp.

"Textile Air Conditioning", Frederick Boxall, air conditioning engineer, The Bahnson Co.; "Installation Service and Maintenance of Cooling Towers and Evaporative Condensers", Edward R. Magnus, chief engineer, Snowhill Mfg. Co.; "Centrifugal Compressors", (As applied to larger tonnage installations), E. R. Michel, manager, direct sales, Air Conditioning and Refrigeration Div., and Paul Venable, manager, Eastern Service and

Engineering Div., Worthington Corp.; "The Use of the Suction Pressure Recording Gage in Diagnosing and Analyzing Service Problems", John H. Spence, service manager, Hussmann Refrigerator Co.; "Air-Cooled Condensers, Large and Small", S. Charles Segal, general sales manager, Kramer Trenton Co.

A one-hour question and answer forum conducted by a panel of industry experts will be a feature of the program on each morning of the three-day meeting.

Business meetings in connection with the 15th annual convention of the Refrigeration Service Engineers Society will be held on Dec. 5 and 8.

The 7th annual meeting of the Refrigeration and Air Conditioning Contractors Association will be held at the Casablanca Hotel, Miami Beach, on Dec. 4 and 5, with a meeting of the RACCA Board of Directors scheduled for Dec. 3. Election of officers will take place on Dec. 5.

Three speakers will feature the two-hour portion of the speaking program of the educational conference at the Miami Public Auditorium from 1 to 3 o'clock on Friday, Dec. 5. Speakers and their subjects will be:

"Is a Profit Justified?", R. S. Lafferty, vice president, Hill-York Corp.; "The Sales Training Technique", G. P. Marburgh, branch manager, Electrolux Corp.; "How Advertising Can Help You", Ernest Foss, advertising and sales Manager, Latin-American Div., Pan American World Airways.

Annual meeting of the Refrigeration Equipment Wholesalers Association will be at the Hollywood Beach Hotel, Hollywood, Fla., on Dec. 8. Also taking place at Hollywood will be meetings of the REMA board of directors, REWA board of directors, product section meetings of REMA, and joint REMA-REWA golf tournament, banquet, and membership meeting.

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G-E TO GIVE UP COMPRESSOR SALES

The Air Conditioning Division of General Electric Co. will discontinue the external sale of refrigeration machines of 2 hp and under at the end of the year.

Arrangements have been made with Tecumseh Products Co. to supply G-E replacement parts through normal distributive channels and to fulfill normal product warranties for G-E refrigeration machines 2 hp and under now in use. Tecumseh will acquire the G-E Air Conditioning Division's small refrigeration machine inventory effective Jan. 1, 1953 for this purpose. Tecumseh will not make refrigeration units under the G-E label, but will be able to offer comparable models from their own lines as the G-E inventory is depleted.

The G-E Air Conditioning Division will continue to manufacture refrigeration machines, both open and sealed type, for its own self-contained or "packaged" products.

Explaining the step, Gen-

DOLE REPRESENTATIVES HOLD ANNUAL SALES MEETING



DOLE EXECUTIVES AND FIELD MEN are shown here during their annual sales meeting at the Palmer House, Chicago, at the time of the Dairy Industries Exposition at Chicago's Navy Pier, where Dole was an exhibitor. Seated, left to right, are: O. J. Armstrong, Richmond; D. A. DeMore, New York City; G. E. Nelson, Boston; A. F. Sawyer, Ormond Beach, Calif.; C. C. Ryan, manager, New York office; J. A. Wilkerson, St. Louis; H. W. Kleist, vice president and chief engineer; O. L. Rose, vice president and assistant general manager; L. E. Smith, sales manager; B. P. Tweed, vice president, manufacturing; R. J. Herman, sales and engineering; H. E. Clay, Los Angeles; A. W. Monroe, Madison, Wis.; H. DeBaugh, sales and engineering; A. B. Brady, Columbus, Ohio; R. L. Ballinger, Seattle. Standing, left to right: G. S. Keeler, assistant to president; J. E. Hutchinson, Canada; H. P. Hanson, manager Canadian subsidiary; Bayard H. Clark, advertising agent; Ernest C. Wilbur, advertising mgr.

eral Electric officials said the decision would allow them to devote their full manufactur-

ing facilities and attention to General Electric home heating and cooling equipment,

packaged air conditioners, heat pumps, water coolers, and other products.



2

PRACTICAL PRODUCTS for Service Engineers



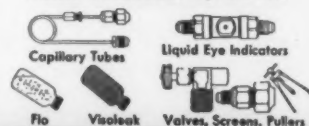
FLO—the new chemical liquid dehydrant in the self-measuring plastic bottle. Renders moisture inert in the refrigeration system and inhibits oxidation, corrosion and rust formation. Completely stable; no change after absorbing moisture; no solids; does not powder. "You get it dry. Keep it dry—chemically."

VISOLEAK—the original leak detector for use in all refrigeration and air conditioning systems. An absolutely inert red dye containing no solids; remains permanently in suspension. Circulates freely throughout the system and instantly shows up leaking joints with a tell-tale red stain. Non-toxic, non-poisonous, non-corrosive.



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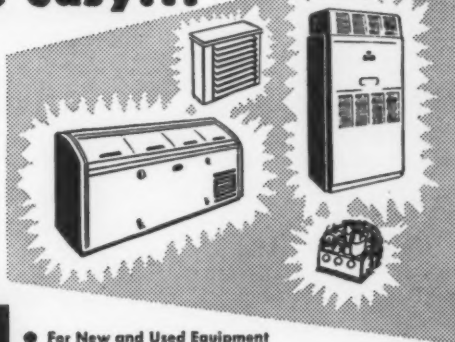
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Only Remington offers such a complete line of room air conditioners.

*Want profits from
room air conditioning?*

Add Remington to your line

You know how fast room air conditioning sold out this year. You know how big—and how ready—the market is.

And, because you *know* refrigeration and air conditioning, you will want to have Remington, the line so complete—consoles as well as window units—that it gives an expert the opportunity to sell the *right* unit for virtually any room.

Get the full details of Remington's new dealer franchise. It may well make '53 your biggest year. You really should write today. Remington Air Conditioning Division, 13-1 Willey Street, Auburn, New York.



SPECIALISTS IN
AIR CONDITIONING

AUBURN, NEW YORK

Circle No. 46 on Reader Service Card for more information

COOLERATOR TO ADD ROOM COOLER LINE

New products in the 1953 Coolerator line will be four room air conditioner models, it was announced by G. L. Rees, president of the Duluth, Minn., company. The new room air conditioners were introduced at the annual Coolerator convention in Hotel Duluth Oct. 9 and 10.

The Coolerator room air conditioners will appear in $\frac{1}{3}$ hp, $\frac{1}{2}$ hp, $\frac{3}{4}$ hp and 1 hp sizes.

Compact in size, the Coolerator air conditioners will fit into a 24-inch window in the $\frac{1}{3}$ hp, $\frac{1}{2}$ hp, and $\frac{3}{4}$ hp sizes, it was announced. Thermostatic control, variable speed operation and reduced projection into the room were other features listed.

GENERAL CONTROLS OPENS NEW PLANT

In a move aimed at strengthening its middle western and eastern market operations, General Controls Co. has opened a new plant in Skokie, Ill., near Chicago.

Civic and business officials from the Chicago metropolitan trading area were guests at a buffet luncheon, along with representatives of state and federal government. Following the luncheon, guests were taken on a tour of the plant's facilities.

Present for the opening were General Controls leaders, including company president William A. Ray, vice president in charge of sales J. F. Ray, vice president in charge of production Alvin W. Ray, and sales manager Fred E. Weldon. The latter will be in charge of the new facility.

Built at a cost of approximately \$750,000, the Skokie plant has 60,000 square feet of floor space located on a five-acre lot, with additional land available for future plant expansion.

Warehouse space will be adequate enough to enable General Controls to service its customers in the mid-western and eastern markets. The remainder of the new plant will

provide office and servicing facilities formerly located in the firm's Chicago branch office. Douglas S. Sterner, manager of refrigeration sales for General Controls, also will make his headquarters in the new Skokie plant.

STURTEVANT TO EXPAND OPERATIONS

Westinghouse Electric Corp. will expand its manufacturing operations in the Boston area soon with a \$1,250,000 building project at its Sturtevant Div. plant in Hyde Park, Mass. The Hyde Park plant manufactures air conditioning equipment, commercial fans, and blowers.

The increasing demand for Sturtevant Div. products has seriously taxed the present facilities. The new structure is expected to provide sorely-needed space in which to expand but also an opportunity to make more efficient use of existing areas.

Operations in the new building will provide new jobs for an estimated 200 people. Total employment at the Hyde Park plant will reach approximately 2200 when the new facilities are fully manned.

NAPRE WILL MEET NOV. 12 IN DALLAS

The Dallas chapter of National Association Practical Refrigerating Engineers will be host to the forty-third annual NAPRE convention to be held in Dallas on Nov. 12, 13 and 14.

The 14 papers to be presented at the meeting include subjects as design of air conditioning systems, design of cold storage plants, testing and rating of refrigeration blower coils, and trends in evaporator designs.

A feature of recent conventions, The Bureau of Refrigeration Information, will be repeated at this meeting with 20 experts available to answer problems of engineers and plant managers. Headquarters will be at the Adolphus Hotel, Dallas.

PLAN YOUR SHOP . . .

Continued from page 37

scrutinized to determine what equipment is effective and what additional or replacement facilities might be needed.

In those sections of the country where heavy seasonal variation in the service load is experienced, off-season use of the shop for the salvage of used units, motors, or assemblies, or even the fabrication of light accessories might be worth investigating.

Make Facilities Fit Need

A complete shop may be justified not only by the volume of necessary work, but also by the distance from the factory and by local labor conditions. The transportation cost of having compressors or complete units factory rebuilt starts to become excessive at about 500 miles, and at the time element involved results in as expensive a "turn-around" stock as is needed to hold material for winter work.

In some sections of the country, shop men receive an appreciably lower pay scale than field service men. Under such conditions it is often advantageous to have a shop in which small units can be repaired, rather than doing the work on the customer's premises.

Planning Will Pay Off

The first and simplest "shop", of course, consists of the tools and supplies carried in the service cars or trucks. For those operators who are shy on shop space or travel long distances to reach their customers, a specially designed "shop on wheels" may be advantageous for backing up the regular service cars.

The basic service shop is essentially a place to use or store the tools and equipment carried in the service truck. About 300 sq. ft. of floor space should be figured as the absolute minimum. The development of a shop can go on almost indefinitely from that point until the proportions of a job machine shop are reached, so it becomes obvious that the economics of the particular operation must be the deciding factor.

Some time, and perhaps a little money, spent in arranging a good flow of work and materials through the shop will pay off.



12 MILLS UNITS INSTALLED IN NEW ST. PAUL SUPER MARKET



COMPLETE INSTALLATION
OF MILLS UNITS AND
275 FEET OF VARIOUS TYPE
REFRIGERATION CABINETS
BY WESSIN STORE FIXTURE CO.
OF MINNEAPOLIS, MINN.

FOR maximum reliability and service-free, low-cost refrigeration, the new Cut Price Super Market had twelve Mills Units of $\frac{3}{4}$ H.P. through 5 H.P. installed. All 275 feet of fixtures and 4 walk-in coolers are refrigerated by these units.

Known for economy, and long life dependability, Mills Units are compact, rugged, and provide smooth vibration-free operation. Low service cost refrigeration and conservative B.T.U. ratings mean Mills Units have ample reserve capacity for heavy duty jobs. Capacities from $\frac{1}{4}$ through 10 H.P. Free literature mailed on request.

MILLS INDUSTRIES, Incorporated
4100 Fullerton Avenue
Chicago 39, Illinois

MILLS

LONG LIFE REFRIGERATION UNITS

Circle No. 40 on Reader Service Card for more information

take a
closer
look

at...

United
WIRE's



**COPPER
REFRIGERATION
TUBING**

UNITED means that it's the product of 83 years of precision tube mill experience and that it's produced on new equipment, by new processes and fine quality controls unequalled anywhere within our industry... that it is better quality, has extra values... without expectation or demand and at no extra cost.

DEOXIDIZED means that all oxides, grease, dirt, slivers, copper dust and foreign substances common to copper tubing have been 100% removed by special processing to prepare it for use, as received, in the finest and most delicately balanced mechanical equipment or control instruments.

DEHYDRATED means that all moisture has been removed prior to sealing and Trade Marking.

Putting them all together...

"UNITED DEOXIDIZED DEHYDRATED" means finer, the finest, Copper Refrigeration and Air-Conditioning Tube made anywhere. UDD will earn your respect and completely justify your confidence in regularly specifying it.

UNITED WIRE
& SUPPLY CORPORATION
PROVIDENCE, RHODE ISLAND

SALES OFFICES

New York	Chicago	Akron	Philadelphia
Rochester	Lansing, Mich.		Los Angeles
Minneapolis	Pittsburgh	Springfield, Mass.	
	Hartford, Conn.		

Circle No. 41 for more information

about **PEOPLE**

W. Whitney Kuenn has been named sales manager of the newly



created air conditioning products division of Owens-Corning Fiberglas Corp. In his new post, Kuenn will co-ordinate sales for such products as Dust-Stop air filter frames, plain and faced Aerocor, and duct insulation. Principal market for products of this division are in the air conditioning and heating fields. Kuenn has headed appliance sales for Owens-Corning since 1948. Before that he was works laboratory engineer, product development engineer and field application engineer in the appliance phase of the company's operations. He has been with Fiberglas since 1943.

sales manager of the Kelvinator Division. Lawson formerly was vice president in charge of sales for Kelvinator, and Packard was household sales manager. In his new post, Lawson assumes policy-making responsibility for distribution of all appliances made or sold by the company, including the new home laundry products. He has been with Kelvinator since 1939, and a vice president since 1943. Packard joined Kelvinator 13 years ago as eastern sales manager, and has been household sales manager since 1947.

Bonney Forge & Tool Works has made important changes in the



F. S. Durham, Jr.



H. J. Seaman

Two appointments have been made in the sales staff of General Electric Co. L. S. Brumgard has been named manager of the apparatus sales office in Trenton, N. J., and E. H. Powell has been appointed assistant manager of G-E's Richmond, Va., apparatus sales office. Brumgard will replace Powell in Trenton. For the last three years he has been in central station sales work. Powell's new appointment is to a regional sales office with branches in Norfolk and Charlottesville, Va., and Williamson, N. C. He has managed the Trenton office since 1949.



E. S. SENDERFER

company's sales set-up. Fred S. Durham, Jr., vice president and secretary, who for the past several years has supervised the company's sales, has been named director of sales.

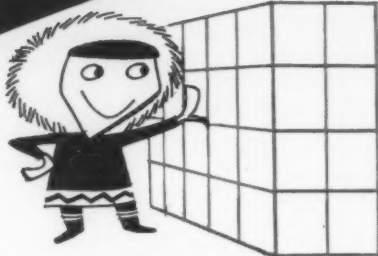
Harry J. Seaman has been appointed field supervisor; and E. S. SENDERFER has been appointed manager of merchandising. SENDERFER will continue to direct Bonney's advertising. In addition, he will be responsible for sales promotion, the production of all sales materials, and will direct the firm's participation in trade shows and exhibits. He will work closely with Dur-

Charles T. Lawson has been advanced to the new post of vice president of appliance distribution for Nash-Kelvinator Corp., and D. A. Packard has been named general

for low temperature insulation!

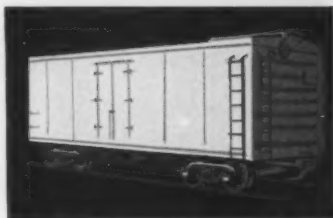
Specify

STYROFOAM



low
thermal
conductivity!

Styrofoam is an ideal insulating material for refrigerated railroad cars and truck trailers, as well as cold storage warehouses, meat packing plants, locker plants and ice cream storage.



Styrofoam® is an effective low temperature insulation material with a long service life. The resistance of Styrofoam to the passage of water and water vapor makes it possible to offer a material that maintains low thermal conductivity. Made of lightweight plastic (Dow polystyrene expanded approximately 40 times) Styrofoam has a non-interconnecting cel-

lular structure that resists the passage of water and water vapor.

This same cellular construction of "dead air cells" retards the transfer of heat. Styrofoam is odorless, and it resists mold, rot and vermin. Lightweight—it is easy to handle and install. Available in rigid board form, Styrofoam can be cut to desired shapes with conventional hand or power

woodworking tools.

Whatever your low temperature insulating problem may be, investigate Styrofoam. Laboratory tests and field performance have shown it to be the most nearly perfect low temperature insulating material yet developed. It delivers effective insulation at an extremely low cost per year of service life.

THE DOW CHEMICAL COMPANY • *Plastics Department* — PL 427A • MIDLAND, MICHIGAN
New York • Boston • Philadelphia • Atlanta • Cleveland • Detroit • Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle • Dow Chemical of Canada, Limited, Toronto, Canada

—write today!—



The Dow Chemical Company
Plastics Department, PL 427A, Midland, Michigan
Please send me your booklet containing information on Styrofoam,
the most nearly perfect low-temperature insulation material.

Name _____ Title _____
Company _____
Address _____
City _____ State _____



Circle No. 42 on Reader Service Card for more information
and AIR CONDITIONING • NOVEMBER, 1952

ABOUT PEOPLE . . .

Continued from page 58

ham in the development of all Bonney sales, advertising, and merchandising programs.

A. P. Zimmerman has joined Carrier Corp. as a senior project engineer in the centrifugal department. He will concentrate on development work for Carrier's line of air and gas

compressors. He was previously with the Elliott Co., Jeannette, Pa., as section engineer in blower design.

Richard Harper has been appointed a sales representative of the Fiber Glass Div. of Libby-Owens-Ford Glass Co. and assigned to its Boston office. He will work directly with Hilary F. Smart, district manager for fiber glass sales in the New England area. Harper was formerly associated with Lamson Brothers' Co., Toledo.

Paul O. Penn has been appointed to the newly created post of executive engineer and



has also been made a member of the executive committee for Penn Controls, Inc. As executive engineer, Penn will direct the activities of the research en-

gineering program and will be responsible for the company's participation in the creation of standards and requirements through trade association technical committees. Penn first joined the firm in 1930 and has filled the positions of branch manager, quality control manager and chief engineer.

Three advancements among its executive personnel have been an-



A. M. Hoover



E. C. Raney



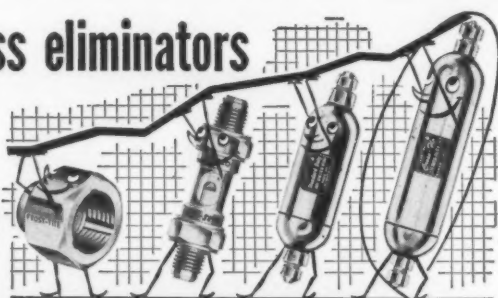
W. R. Opp

nounced by Ranco Inc. **Arthur M. Hoover** has been elected president of Ranco to succeed **E. C. Raney**. Raney assumes the company's board chairmanship. **W. R. Opp**

has been elected vice president in charge of manufacturing. With the firm since 1920, Hoover has served as an executive of Ranco since becoming vice president in 1935. He later became general manager and director. Raney, who founded the company in 1913, will now devote more time to the improvement and research needs of the firm's customers. Opp, formerly factory manager, has been with the Ranco organization since 1929.

REMCO loss eliminators

pull up profits for you!



FROST-TITE FLARE NUTS
with forged frost-relief slots. No more losses from loosened "creeping" nuts.

E-Z-SEE LIQUID INDICATORS
E-Z to see thru with new "FLO-INDICATOR" to indicate variations of flow.

STANDARD DUTY DRIERS
The lowest cost, most-efficient molded drier on the market.



New 100% improved and 100% foolproof! The New FIBERGLAS DEPTH FILTER provides vastly increased filtering capacity to take care of the dirtiest jobs—improved efficiency for even the smallest capillary jobs.

The **MOLDED REMCAL DRYING ELEMENT** provides increased moisture-absorbing capacity and improved efficiency even at liquid line temperatures as high as 150° F. and dew point temperatures as low as -60° F. Improved design also provides increased flow area—pressure drop and premature clogging or plugging are entirely eliminated.

ATTENTION! MANUFACTURERS!

Try Remco Standard-Duty Driers for real low-cost efficiency. Spun ends, with either Molded Remcal or Silica Gel. ¼ thru 1½ HP.



Carried in stock by
Leading Wholesalers

Send for Literature and Prices



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Alfred M. Esberg, vice president of American Potash & Chemical Corp. in charge of its Eston Chemicals Div., has been elected a director of the company. Esberg was one of the founders of Eston Chemicals, Inc., which became part of American



Potash & Chemicals Corp. through merger in August of this year. A veteran of the chemical business, Eston from 1932 to 1934 was superintendent of Marine Magnesium Co., San Francisco, and in the latter part of 1934 he established the predecessor of Eston Chemicals, Inc. under the name of Pittsburg Chemical Co.

Three new department heads have been appointed by McCray Refriger-



F. L. Barnett



E. J. Latzko



D. L. Taft

ator Co. **Fred L. Barnett** has been appointed sales manager, national accounts; **Edwin J. Latzko** assumes the duties of sales promotion manager; and **Donald L. Taft** has been appointed general service manager. Formerly western national accounts manager, Barnett's new job includes development of volume sales to national outlets, manufacturer accounts and the Federal Government. Latzko has been associated with McCray for the past five years in various capacities in the sales and engineering divisions. He is now responsible for the execution of the increased sales promotion program including publicity, national exhibiting and editing a new sales publication. Development of the field service train-

ing program and the new re-aligned general service policy will now be handled by Taft who was formerly service manager of Universal Cooler Div. of Tecumseh Products Co.

Harold Hayes, dean of engineering at California State Polytechnic college, has been appointed to a national committee of the American Society of Refrigeration Engineers. The committee will investigate standards for determining design condi-

tions and methods of calculating heat transfer through various types of construction.

R. C. Robertson has been appointed manager of marketing of General Electric's home heating and cooling department. Robertson, who joined G.E. in 1951, was formerly manager of district sales for the firm's air conditioning division. Prior to joining the company he was eastern district manager of the Superior



United
harmony of
design, appearance
and value!

Note your own experience. Only an UPRIGHT FREEZER can give you large capacity service in a limited floor area . . . only UNITED'S UPRIGHT FREEZER has the appearance and convenience that are demanded today.

And here's a new note. UNITED'S UPRIGHT FREEZER has contact coils built into top, bottom and each of the four shelves.

Therefore, each shelf is an individual 'fast freeze' unit . . . built in for faster freezing and better holding qualities.

Demand the freezer that does the most for you—UNITED'S UPRIGHT FREEZER—and your sales will show you why.

UNITED upright freezers come in the two popular sizes . . . 15 cu. ft. and 32 cu. ft.

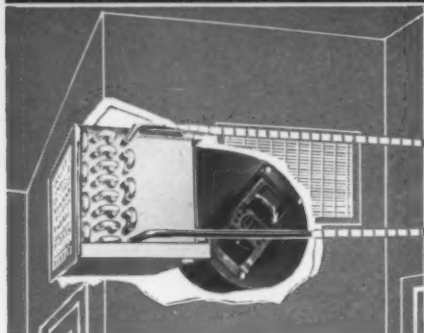


For complete information
phone, wire or
write today

REFRIGERATOR COMPANY
Locust & Walnut Streets
HUDSON, WISCONSIN
EXPORT SALES DIVISION
Scheel International, Inc.
4237 N. Lincoln Avenue, Chicago, U. S. A.

Circle No. 44 on Reader Service Card for more information

WHY INSTALL AND INSULATE EXPENSIVE DUCT WORK TO AIR CONDITION A NEW BUILDING? WHY WRECK AN OLD BUILDING TO INSTALL AND INSULATE EXPENSIVE DUCT WORK?



INSTALL ZONE AIR CONDITIONING AND GAIN THESE ADVANTAGES — HRC UNITS COOL, HEAT, FILTER, VENTILATE, DEHUMIDIFY AND RECIRCULATE THE AIR — SIMPLIFIED PIPING CAN BE USED FOR EITHER COLD OR HOT WATER. ALSO FOR USE WITH FREON

SPOTAIRE
Series H.R.C.

is
"Quiet Beyond Belief!"

ACCOMPLISHED BY USING
LARGE FAN TURNING AT LOW SPEED
A d-h EXCLUSIVE FEATURE

drayer-hanson
INCORPORATED

FACTORY — 3301 MEDFORD ST., LOS ANGELES 62, CALIF.
Address Mail: Box 2215 TERMINAL ANNEX, LOS ANGELES 54, CALIF.

TRUE AIR CONDITIONING IS
NOW POSSIBLE WITH

SPOTAIRE

Series HRC
"INSTALLED WITH
ORDINARY PIPING"

SAVES MATERIAL
SAVES LABOR
SAVES TIME
SAVES 30% PLUS

MAKES POSSIBLE ECONOMICAL AIR
CONDITIONING OF EXISTING BUILD-
INGS AS WELL AS NEW

Thousands of existing structures
motels, hotels, hospitals, offices,
residences, and apartments are
ready for air conditioning. This
business is yours for the taking.

INSTALL UNITS LIKE YOU
WOULD A RADIATOR

IN ATTICS, UPPER AREA OF CLOSETS,
AND OTHER OUT OF WAY, OUT OF
SIGHT PLACES

Write for Literature

CHILLED
WATER
UNIT

Valve and Fittings Co. and had served as assistant general sales manager and manager of national accounts with Chrysler Airtemp.

B. W. Henn, formerly of Cleveland, has been appointed assistant sales manager of Schnacke, Inc. in charge of sales of compressors and condensing units from 5 to 60 hp through sales representatives in 42 cities. This also includes the line of home air conditioners recently developed by Schnacke.

Arthur S. White, originally assigned as sales representative of the Fiber Glass Div. of Libby-Owens-Ford Glass Co. in Kansas City, has been moved to Chicago and will have his headquarters at 120 S. LaSalle St. White was formerly in the engineering department of Socony-Vacuum Oil Co., in Chicago.

Merle G. Haynes has been appointed exclusive representative for Remco, Inc., and Halstead & Mitchell in California, Arizona and Nevada. His headquarters will be in the San Francisco Bay district. Haynes has been in the refrigeration field since 1923, and besides having been a manufacturers representative for several years, was western sales manager for Sporlan Valve Co., with headquarters in St. Louis, from 1949 to 1951. He has been in his present post since April of this year.

Four changes in the staff of the technical refrigeration division of Bowser, Inc., have been announced. **Jack Shamroth** has been appointed vice president in charge of manufacturing; **Thaddeus Augustyn** has

JARROW

*The Outstanding
Name for...*

**REFRIGERATOR
DOOR GASKETS
AND ACCESSORIES**

Supplied by Wholesalers Everywhere

JARROW PRODUCTS
420 NO. LA SALLE ST., CHICAGO 10

Circle No. 48 on Reader Service Card
62

DELANVAN

**PARTS FOR
CHIEFTAIN
COMPRESSORS**

E201
(for all single
cylinder compressors)

E195
for all double
cylinder compressors

Write for Catalog 50B

**DELANVAN
MANUFACTURING CO.**
2009 SIXTH AVENUE
DES MOINES 13, IOWA

Circle No. 49 on Reader Service Card
NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

been named production manager and member of the management committee; **Norman Miller** now heads the drafting department and **Carl Scheetman** has been named chief draftsman.

Edward A. McCabe has been appointed manager of the New York division of Gustin-Bacon Mfg. Co. McCabe will be in charge of all glass fiber insulation, industrial and railroad division sales in New England, New York, New Jersey, Pennsylvania and Delaware. He has been with the firm since 1942 and was previously special engineer in the office of the executive vice president of the New York Central System.

Herbert S. Leo has been appointed general manager of Utility Ap-

pliance Corp., Los Angeles. Leo will now serve as coordinator of the heating, cooling and appliance divisions. He was formerly director of sales for the heating division. Moving up into Leo's former position is **Stanley Skafte**, until recently field engineer for Utility.

Robert K. Pepple, McCray Refrigerator Co.'s south central district sales manager died recently at the age of 54. Pepple had been with the company since 1937 when he became a franchise distributor selling equipment in Jackson, Mich. He served subsequently as branch manager in Dallas and Memphis, and Western district sales manager before his recent assignment with headquarters in Dallas.

Ed S. Johnson has been appointed representative in the Minneapolis territory for Madden Brass Products Co. Johnson will cover the states of North and South Dakota, Minnesota, the northern half of Iowa, and the

northwest portion of Wisconsin. Johnson is currently serving as secretary of the Twin Cities Chapter of RSES.

John W. Wallace has been advanced to the position of midwest division sales manager of Cory Corp., Chicago. Formerly sales manager of Fresh'nd-Aire Co., a division of Cory, Wallace will now supervise regional sales in Detroit, Chicago, Milwaukee, Minneapolis, St. Paul and Omaha in respect to products of Fresh'nd-Aire as well as other Cory products.

Walter L. Smith, formerly works manager for Chase Metal Works, has been elected vice president in charge of operations and director of Chase Brass & Copper Co., Inc. Smith joined Chase in 1915.



**The Serviceman's
Best Friend**
Used Across America



Excellent for Painting or Touching Up
Air Conditioning Equip. Fin Pipes
Duct Work Convectors
Grilles Cabinets
Piping and Cocks And 101 other uses

For better work and profit! No mixing, no clean-up, no compressor or hose needed. Just shake the can and paint. All cans furnished with guaranteed non-clogging spray valve. Complete your jobs the modern way. Ask your jobber for Sprayon today!

Attention Representatives! Some select territories still open. Write for money making details today!

COLORS: Chrome Aluminum
Gloss White • Gloss Black
Bleed Green • Bright Red
Medium Gray • Royal Blue
Ivory • Bright Gold • Copper-
plate • Yellow • Clear Plastic
Black Lacquer • Black
Undercoater

**CHAMPION BRONZE POWDER
& PAINT CO., Inc.**
C 2526 W. Van Buren Chicago 12, Ill.

Circle No. 39 for more information
and **AIR CONDITIONING • NOVEMBER, 1952**



ANY SIZE? Yes, sir!

Your special size may be standard with us. Whatever the size, if it's an **ACE DRILL BUSHING** you can depend on highest quality, manufacturing precision and prompt delivery. For the best . . . Always Specify Ace!

ACE DRILL BUSHING CO., INC.

5407 Fountain Ave. Dept. 1101-11 Los Angeles 29

Circle No. 38 for more information

PARTS STOCK . . .

Continued from page 43

system to the maximum is to keep one or more of a part wrapped up as a reserve. Then when the loose stock is used it is obviously time to reorder.

As the stock becomes more varied and item quantities larger, a simple card system should be set up. This may also be necessary where small stocks cannot be well binned or easily seen. Any parts stock over \$3000 should have a card file control system.

Size and shape of the inventory card may vary, and the number and position of entries may change, but certain essential information must be contained on each card if this system dozen suggested entries listed below, is to operate satisfactorily. Of the the first six are quite permanent, and only the last six are regularly used:

1. Vendor
2. Catalog number
3. Part name
4. Annual usage
5. Order quantity
6. Order point

7. Cost
8. Selling price
9. Quantity disbursed and work order or requisition number
10. Balance on hand
11. Quantity on order and purchase order number
12. Quantity received, purchase order number, and balance due

While these inventory cards are complete enough for very extensive operations, they also can be used at practically no expense by smaller dealers as well.

Delegate Responsibility

One suggested arrangement would be for the service foreman, in addition to assigning and supervising work, to be responsible for ordering the parts stock. One of the office clerks could handle the phone calls and do the necessary paper work.

In such an arrangement the service foreman would be responsible for the entire parts stock, but the clerk would see to it that the items taken out by the foreman or the servicemen check with work orders, would properly post them, write purchase orders for official signature, check and post receipts, and in general be responsible for clerical details.

In a larger operation the stock man or the dispatcher might handle the posting as well as being fully responsible for stock. Expansion under such a system can be indefinite, even if it goes to full time personnel and wheel or tray type card holders.

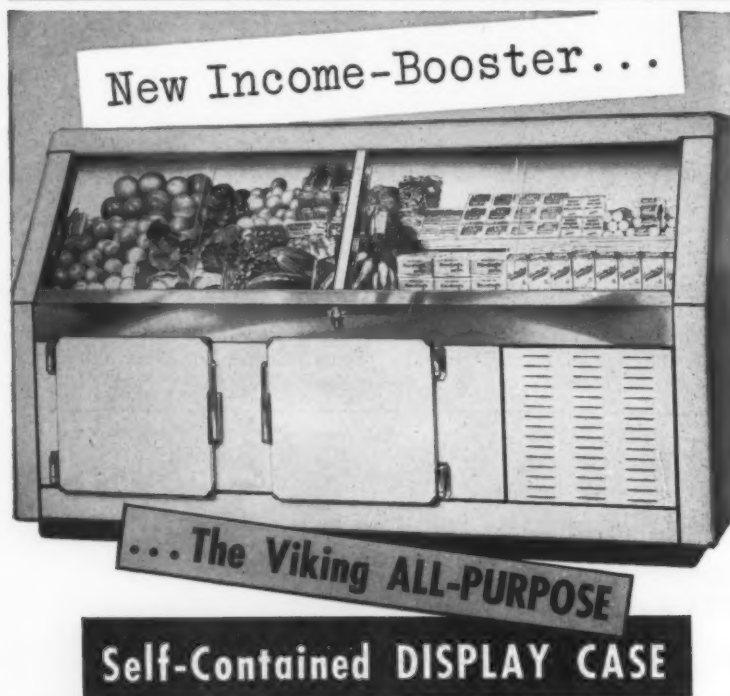
Arrange File Simply

Arrangement of stock and of inventory cards should be simple and logical so that anyone can easily locate an item. Two methods are particularly popular.

One is to arrange by commodity, grouping valves in one place, fittings in another, etc. This is most suitable for small operations where the various groups are easily found without any formal bin location record.

Another method is to group parts alphabetically and numerically by catalog number. Some adaptation of this, or some combination of it with the first method, is necessary to successfully handle large stocks. Its disadvantage is the tendency to mix all types of products together.

**BUY FROM YOUR
REFRIGERATION WHOLESALER**



NOW... a complete self-service department in just one refrigerated case! Your customers can use the new Viking All-Purpose Case to display any combination of these products at the same time: vegetables, fruits, dairy products, delicatessen items, bottled goods, smoked meats. Viking Dew Mist Control allows positive moisture control.

Porcelain front and top, gleaming stainless steel trim. 8' and 10' lengths. *Self-contained . . . for easier, more economical installation . . . convenient moving to new locations in the store.* Offer your customers the profit-making case they want . . . the *all-purpose Viking . . . and make more profits yourself!*

**Mail Coupon
TODAY**

SINCE 1904

QUALITY LEADER

VIKING REFRIGERATORS, INC.
7508 Wilson Avenue
Kansas City, Missouri

☐ Send me more information about Viking's new All-Purpose Case.

☐ Tell me about the availability of Viking franchises in my area.

Name

Firm

Address

City State

VIKING REFRIGERATORS, INC.
7508 Wilson Ave., Kansas City, Mo.

Circle No. 45 on Reader Service Card for more information

NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

COMMERCIAL *Refrigerator* SALES NEWS

THEY'LL HEAD NCRSA FOR THE COMING YEAR



New officers of the National Commercial Refrigerator Sales Association take over following their election at the group's sixth annual convention. Left to right they are: Dudley M. Cawthon, Miami, Fla., director; Donald D. Denny, Dayton, Ohio, director; George F. Wiedemer, Rochester, N. Y., treasurer; Paul Allen, Little Rock, Ark., director; R. J. Wischusen, Jersey City, N. J., 2nd vice president; and Irving W. Shell, Chicago, president. Not present in this photo is the new 1st vice president, S. G. Taylor, Des Moines, Iowa.

Shell New President of NCRSA; 40% Membership Gain Reported

SPIRITED discussion on various phases of the vital problem of profit building sparked the sixth annual convention of the National Commercial Refrigerator Sales Association held in Chicago Sept. 22 and 23.

Discussion topics ranged all the way from the benefits to distributors of profit-sharing plans for their employees to realistic ways of reducing operating costs. Detailed reports on many of these papers will be published in this issue and subsequent issues of Commercial Refrigeration and Air Conditioning.

Elected new president of NCRSA at this meeting was Irving W. Shell, Lee Shell Co., Chicago. Other new officers are: 1st vice president, R. J. Wischusen, Engineering & Refrigeration, Inc., Jersey City, N. J.; 2nd vice president, S. G. Taylor, Taylor Refrigerator Co., Des Moines, Iowa;

treasurer, G. F. Wiedemer, Cable, Wiedemer, Inc., Rochester, N. Y.

New directors elected for 3-year terms expiring in 1955 include: Paul Allen, Paul Allen Refrigeration Co., Little Rock, Ark.; Dudley Cawthon, Dudley M. Cawthon Co., Miami, Fla.; and Donald Denny, Modern Market Fixtures, Inc., Dayton, Ohio.

Frank D. Stella, F. D. Stella Products Co., Detroit, NCRSA president for the past year, conducted the sessions with the assistance of Miss Marie H. Lawton and Thomas A. Fernley, Jr. of the association management firm of Fernley & Fernley. Miss Lawton remains as executive secretary of NCRSA, while Stella joins the association's advisory board composed of past presidents.

Growth in NCRSA membership of nearly 40% since the last annual convention in November 1951 was re-

ported by the association with the announcement that active membership now stands at 168 distributor and dealer firms. Attendance at the convention totaled more than 80 persons, despite the fact that it was not held in conjunction with any other industry activities as has been the case in the past.

A detailed listing of convention speakers and their topics follows:

"The Benefits of Profit-Planning and Profit-Sharing", Frank Stella; "How Distributors Can Make Advertising More Profitable", R. E. Stephenson, advertising manager, Hussman Refrigeration, Inc.; "Financing Sales for Best Results", Kenneth R. Wells, vice president, American National Bank & Trust Co., Chicago.

"The 'Plus' Service that Pays Dividends", Irving Shell; "Distributors—The Vital Link in Successful Merchandising", J. W. Bostwick, general sales manager, McCray Refrigerator Co., Inc.; "The Future of Self Service Meats", W. S. Shafer, vice president, Armour & Co., Chicago.

"How To Make a Profit from Used Equipment Taken as Trade-Ins", George Wiedemer; "Our Service Operation", H. E. Schreiber, sales manager, Electric Products, Inc., Pittsburgh, Pa.; "How to Reduce Operating Costs", R. H. Winther Co., San Francisco, Calif.

NEW DETROIT MARKET IS AIR CONDITIONED

The newest Wrigley food market located at Plymouth and Telegraph Roads in suburban Detroit features year round air conditioning using Marlo ceiling units and evaporative condensers. Architect for this modern food store was Robert Sorota. Heating and air conditioning contractor was the American Automatic Heating Co. of Detroit.

\$2 MILLION EXPANSION COMPLETED BY BS&B

A \$2 million expansion of plant facilities at its Kansas City and Oklahoma City plants has been virtually completed by Black, Sivalls & Bryson, Inc. The Oklahoma City expansion provides for 57,000 sq. ft. of added manufacturing area, and about 78,000 sq. ft. of manufacturing and storage space have been added at the Kansas City plant.

For the refrigeration field, BS&B manufactures a line of safety heads.

90-BELOW TEST LAB AT PERFECTION STOVE

Temperatures as low as 85 degrees below zero are currently being reached in a new sub-zero laboratory developed and built by Perfection Stove Co. in Cleveland, Ohio. It is capable of a temperature of -90 F.

Unique in private industry, this cold laboratory is said to rank with the best of those developed by the armed services for testing combat vehicles and other equipment.

Perfection built this cold laboratory, at a cost of \$250,000 to cold-test the starting characteristics of internal combustion engines, the characteristics of fuels and lubricants, the metallurgy of metals, the characteristics of materials and the efficiency of heating devices at temperatures ranging from -65 F to -85 F.

The 85-below building is a 60 x 60 ft. structure with the 30'8" x 32'4" sub-zero laboratory and 30'8" x 10' ante chamber inside. Walls of the cold chamber are insulated with 12-inch thicknesses of Johns-Manville rock cork, the exterior, wall and ceiling flooded with asphalt. The ceiling is applied on top of transite-corrugated



SUB-ZERO TESTING of internal combustion engines, oils and lubricants, and other operating characteristics is done by Perfection Stove Co. technicians in this new low-temperature laboratory, which is capable of reaching -90 F. Ramsey-Bennett Co., Cleveland, engineered and installed the system.

board, supported by 4" x 8" wood beams. The cold laboratory is large enough to simultaneously house two Greyhound buses.

The mechanical refrigeration system is a two-stage installation employing F-22 as the refrigerant. Total capacity of the equipment is 13.6 tons

at a room temperature of minus 65 F. Air turbulence and temperature in the test room is achieved by two Krack Blo-E-Fex units each circulating 15,000 cfm for a total of 30,000 cfm. This rate of discharge produces a room volume recirculation every 30 seconds.



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Now you can get your plates exactly as you want them . . . any size . . . any shape . . . any metal! Think what this means in time saved . . . **MONEY SAVED!** Before you buy another plate, get the facts on DEAN "job tailored" cold plates. It will be well worth your while! Ask your jobber, or write

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VISIT US AT BOOTH 73, 10th RS&S-REMA SHOW, MIAMI, FLA.

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NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

Refrigeration is provided by three Brunner compressors hooked up in two-stage system. The first stage constitutes two 8-cylinder pumps, each driven by 40 hp motors. Each one works with its own blower unit thus eliminating many turning ells and long runs in the suction line to the compressor. Each of these pumps discharge into a common manifold which, in turn, becomes the suction line to the second stage pump. This pump is a 4-cylinder unit powered by a 50 hp motor and is used in conjunction with a Krack evaporative condenser.

The hot gas discharge from the first stage compressors is precooled in a flash cooler mounted in the discharge manifold by directly expanding a small portion of the liquid F-22. This operation increases the efficiency of the second stage pump. The liquid F-22 leaves the receiver tank at the evaporative condenser and is cooled in a liquid sub-cooler again by directly expanding a small portion of the liquid F-22 around it.

For further reduction in temperature the main body of chilled liquid F-22 passes through one side of a

TO familiarize salesmen from other companies with Ansul and its products, the Ansul Chemical Co. has prepared a booklet describing the company and its products, and listing names of key personnel to be seen.

Intended for distribution in the reception room, while the visiting salesman is waiting, the booklet offers a wide variety of information about the company and the community.

heat exchange, the other side of which is immediately after the low temperature coil. This sub-zero liquid is then metered to direct expansion valves at the blower unit coils by electric valves.

The entire system is controlled by a Brown recording temperature controller, and is capable of maintaining the room at the setting plus or minus 1½F. Practically every known precaution was incorporated in the electrical control circuit to protect the system.

A Pittsburgh Lectrodryer is used in conjunction with the cold laboratory to supply makeup air to the room at minus 10° dew point during a live load test at -65F, and to effectively dry the room prior to a pull

down. This procedure greatly reduces the rate of frost build-up on coils.

To facilitate the entry of large vehicles such as tanks and trucks, the 85-below laboratory has been constructed with a 12 x 12 ft. loading door. Six-light Thermopane viewing windows, 24" x 36", permit a check on cold chamber activities from the ante-chamber.

So that technicians working in the sub-zero laboratory are protected, an alarm system has been rigged up, with control buttons placed at various points inside. Also, technicians may communicate with those on the outside by means of an intercommunication system.

Compared with the process of commercial refrigeration, which operates at approximately -40F, the Perfection sub-zero laboratory is capable of producing cold which will change oils and diesel fuels to solids, cause metals to become brittle, and cause gasoline to extinguish a fire, under test conditions, at -65F.

Refrigerating equipment in the Perfection cold laboratory was designed, engineered and installed by the Ramsey-Bennett Co., Cleveland.



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Best Sellers build sales

Whatever your display . . . customers
judge you by ease of self-service,
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and AIR CONDITIONING • NOVEMBER, 1952

Circle No. 53 on Reader Service Card for more information

CONTRACTORS

NEWS • ACTIVITIES • PLANS

RACCA Completes Plans for Annual Convention in Florida Next Month

RACCA's 7th annual convention will be held on Dec. 3, 4 and 5 at Miami Beach's most luxurious and fabulous hotel—The Casablanca—on the ocean at 63rd St.

The convention will open with a board of directors' meeting on Wednesday, Dec. 3.

On Thursday, Dec. 4, general sessions will be held in both morning and afternoon, as well as a luncheon. The luncheon will feature as speaker R. B. Roberts, Jr., vice president of the Florida Power and Light Co., who will present a graphic picture of

what air conditioning has done for the Miami area. He will talk on "Building an Economy with Air Conditioning".

Other subjects at the general sessions will include "Heating and Air Conditioning", by E. A. Cline, general sales manager of The Trane Co., "The Future of Self Service Meats", and "Frozen Foods".

A two-hour business administration meeting arranged by RACCA for a joint meeting with REMA and RSES on Friday afternoon, Dec. 5, at The Auditorium, will feature three promi-

nent speakers, all of whom have talks packed with factual data of great importance to the contractor.

R. S. Lafferty, vice president of Hill-York Corp. an excellent speaker, has chosen for his subject a topic to which he has devoted years of study: "Is a Profit Justified?"

"Sales Training Techniques" is the title of a talk to be given by Gregory P. Marburgh, branch manager of the Electrolux Corp. in Miami, and a member of the board of directors of the Sales Executives Club.

Ernest L. Foss, sales and advertising manager of Pan American World Airways, Latin-American Division, will talk on "Advertising". Foss is past president of the Miami Ad Club.

RACCA's annual business meeting and election of officers will take place on Friday morning, Dec. 5, at The Casablanca.

Of special interest to RACCA's guests will be the exceptionally low rates secured at the hotel: \$6 for single rooms and \$8 double. These rooms, during the season, rent for \$40 to \$50 per day. It is hoped many of the members will avail themselves of this opportunity to plan their vacations to coincide with RACCA's convention, and if they care to stay on until Dec. 15, the hotel will extend the same rates.

CLEVELAND SALESMAN WINS IN KOLD-DRAFT CONTEST



DOUBLE WINNER in the recent Kold-Draft sales contest sponsored by Uniflow Mfg. Co. was Sandor Frankfurt (left), of the J. P. Stewart Co., Uniflow Kold-Draft distributor in Cleveland. In addition to winning the top national prize, along with his share of quota and bonus awards, Frankfurt won a new Chrysler Imperial four-door sedan for exceeding his quota of \$75,000 in retail sales during the contest period. Presenting him with the keys to his new car is John Stewart, president of J. P. Stewart Co. Other national award winners in the Kold-Draft competition were E. G. Krupnick of Kold-Draft, Columbus, Ohio; Louis Sparr of Kold-Draft, Pittsburgh; Edward Levitch of Amster-Kirtz Co., Akron, Ohio; and C. Meinstein of D. L. Dineen Sales & Service, New York.

LOW-TEMP RESEARCH ADVANCES IN JAPAN

Installation of the first helium liquefier in Asia was recently announced by Arthur D. Little, Inc., consulting industrial research and engineering firm of Cambridge, Mass., designers and producers of the unit. The unit, an ADL Collins Helium Cryostat, was bought by the Research Institute for Iron, Steel and Other Metals of the University of Tohoku, Sendai, Japan, for Eizo Kanda, head of the Institute's Low Temperature Research Laboratory.

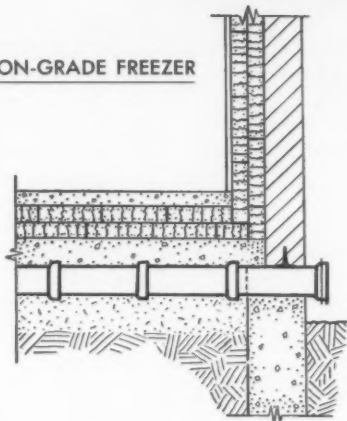
Availability of the Cryostat, installed during August 1952 by Milton Streeter of Arthur D. Little, Inc., opens a whole new extension in low temperature research close to absolute zero for Japanese scientists.

The Cryostat test chamber may be maintained at any temperature from normal room temperatures to -456°F by imposing a thermostatically controlled heat load or by operating at a pressure less than the normal 200 psi. Experiments can be performed

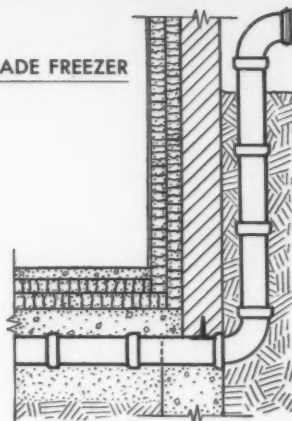
From our notebook of

INSULATION CONSTRUCTION

ON-GRADE FREEZER



BELOW-GRADE FREEZER



How to provide sub-floor ventilation for on-grade and below-grade freezers

Ice formation in the ground beneath cold rooms can be a serious threat to their performance. This problem is particularly acute in the case of large freezers. Over long periods of time, refrigeration in the room draws heat from the ground through the floor slab faster than it can be replaced by natural forces. As the ground becomes colder, it freezes and expands. This exerts pressures which can buckle the floor, crack the walls, and cause complete failure of the room.

No practical amount of insulation can be expected to stop this flow of heat from the sub-soil; insulation retards but never completely eliminates heat flow. Frost damage can be prevented, however, by ventilating the sub-soil under the room with a system of air ducts.

Ducts should be spaced at regular intervals in a cinder or crushed stone fill beneath the sub-floor. They should be 6" or 8" terra cotta drain tile on 6' centers or 2' x 3' concrete tunnels on 20' centers. Both types are laid across the short dimension of the room to allow maximum circulation. One end of

each duct should be lower to create a draft of warm air sufficient to keep ground temperatures above the freezing point and prevent frost formation.

Sub-floor ventilation is unnecessary in rooms less than 20' x 20'. Under average conditions, natural heat from sun and earth will penetrate under the floor 10' from outside walls.

The installation of sub-floor air ducts, like many aspects of low-temperature work, calls for a special knowledge of cold-room construction. That's one good reason for calling the Armstrong engineer whenever you're planning a cold-room job. His experience and advice can save you time and money—and insure a long-lasting, efficient insulation job. In addition, Armstrong offers you a complete line of top-quality insulating materials and skilled workmen to apply them properly. For further information about our complete insulation service, contact your near-by Armstrong office or write direct to Armstrong Cork Company, 5311 Concord St., Lancaster, Penna.

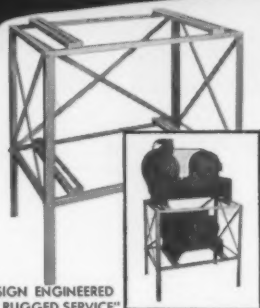


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A ready-made, sturdy, dependable rack, cross-braced both ends, quickly installed.

SAVES valuable space.

RAISES units off floor; IMPROVES appearance.

FIRE HAZARD PROTECTION—all metal!

ECONOMICAL—better than home-made racks.

Adjustable for various compressor sizes. Will accommodate 90% of all units. INSTALLATION SPACE—39 1/4" x 25 1/4". Weight 58 lbs.

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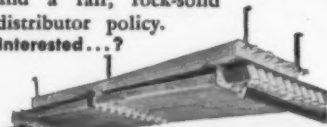
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Fine PRODUCTS CO.
4837 SOUTH WESTERN BLVD.
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Tenney's On the Move!



... with top-flight refrigeration equipment like this coil and pan combination—backed by the finest engineering and a fair, rock-solid distributor policy. Interested...?



Talk it over with

Tenney

ENGINEERING, INCORPORATED

Ⓢ 1413 Newark, New Jersey

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in the cryostat test chamber or the liquefied gas can be removed through a built-in-draw-off tube, for use in experiments remote from the machine.

OIL ADDITIVE REDUCES FRICTION, TESTS SHOW

Reports of favorable tests of "Addit 88" under laboratory conditions are reported by Henry Ehrens, president of Sealed Unit Parts Co., Inc., which put this new oil additive on the market a few months ago.

To substantiate tests which have been conducted in its own laboratory for the past year and a half, Sealed Unit Parts sent samples of "Addit 88" to the New York Testing Laboratory, Inc. for study, Ehrens said.

There, each sample of oil was spread uniformly to a thickness of approximately .003" over a plate glass surface inclined 9°. Over this film of oil a steel metal block having one smooth surface with an area of 41.3 sq. cm. and weighing 834 g was allowed to slide for a distance of 17". The time required for the metal block to travel the distance was recorded.

The test was performed in a cold chamber where the temperature of the oil and apparatus was maintained at 3 F, plus or minus 3°.

Results, converted into percentage by which friction was reduced, showed that oil with additive reduced friction by 46.7% over oil with no additive, Ehrens reported. Further independent laboratory tests are now being conducted, he added, and results will be announced.

NEW BALTIMORE FOOD WAREHOUSE

Merchants Terminal Corp., operators of ice manufacturing plants and refrigerated warehouses, has under construction a new frozen-food warehouse believed to be one of the largest commercial freezer warehouses in the Baltimore area.

The new plant, which will use refrigeration equipment manufactured by York Corp., is scheduled to begin operation by Oct. 1. It will be a complete storage terminal for meats, fish, seafood, fruits and vegetables.

The refrigeration system consists of York "Hi-Fin" coils in the ceilings of the million-cubic-foot -10° F. storage rooms and spiral fin coils in the -40° F. sharp freezing tunnels, all served from a dual Freon-12 liquid

recirculation system. York V/W type refrigeration compressors and auxiliary equipment complete the power plant.

The "Hi-Fin" coils over the aisles provide the necessary air motion in the storage rooms without the use of fans, eliminating any fan motor heat input into the rooms.

UNIT COOLS OFFICES, VENTILATES FACTORY

Packaged central station equipment is being used to air condition administrative and engineering offices and assist in ventilation of the main factory area in a Long Island City, N. Y., electronics plant, it is reported by George Cort, of Cort Mechanical Corp. who has just completed the installation for the Mark Simpson Mfg. Co.

A usAIRco 15-ton "Refrigerated Kooler-aire" unit has been placed in

GUSTIN-BACON Mfg. Co., producer of glass fiber insulation, is distributing a unique direct-mail piece which incorporates a sample of the product itself and invites a test of all its qualities.

Intended for a mailing by distributors to architects who are awarded certain industrial jobs, the piece extends Gustin-Bacon's congratulations to the architect for having obtained the job, and offers a "helping hand" in providing the insulation.

A piece of insulation, cut in the shape of a hand, is attached to the folder, and the recipient is invited to test the material by compressing, shaking, wetting, bumping, bending or exposing it to fire.

the factory section of the one-story building. An extensive system of ductwork for supply and return air connects to eight offices and a group of soundproof audio testing rooms.

Evaporative condenser air, drawn directly from the factory area, supplements the ventilation provided by five 10,000 cfm roof exhausters. Fresh air and condenser discharge are taken directly through the roof above the unit.

MEXICO CITY ARENA SERVED BY CARRIER

Air conditioning equipment for Mexico City's huge new municipal auditorium, now nearing completion, is being supplied by Carrier.

The auditorium containing one of the world's largest indoor arenas,

with a maximum seating capacity of 18,500 persons, will be served by the largest comfort air conditioning system in Mexico. The building itself is the equivalent of 14 stories high and approximately 400 feet in length.

Equipment for the air conditioning system includes a centrifugal refrigeration machine of 650 tons capacity and two large spray-type dehumidifiers.

FLORIDA MOTEL GUESTS CAN DIAL OWN WEATHER

No matter what the weather, guests at the Flamingo Court, Orlando, Fla., will be able to adjust the temperature to suit themselves with the recent installation of 40 $\frac{3}{4}$ hp room air conditioners.

The air conditioners were installed in through-the-wall mounts over radiant electric heaters so that guests could easily adjust for any climate



condition. Possibility of sleep disturbing drafts has been eliminated by the high position of the air conditioning units.

The management of the court pointed out that the use of individually controlled Mitchell units allowed guests a greater choice of temperature than would have been possible with a centrally located unit. Installation was made by the St. Anthony Corp.

KINNEY APPOINTS PITTSBURGH AGENCY

Harris Pump & Supply Co., Pittsburgh, has been appointed exclusive sales representative in western Pennsylvania and West Virginia for the Kinney Mfg. Co., Boston.

NoDrip TAPE

SOLVES the Problem of CONDENSATION DRIP

- KEEPS PIPES CLEAN AND DRY
- PREVENTS RUSTING, THUS PROLONGING LIFE
- KEEPS FLOORS DRY AND SAFER

NoDrip Tape forms a tight fitting, sealed jacket—holds temperatures steadier—eliminates icing and frosting.



Cold water pipes and suction lines running from refrigerating machines to condensers, all joints and fittings, need NoDrip Tape.

Also used on refrigerant lines in air conditioning systems, walk-in freezers, deep freezers for home and business, and on cold water pipes in basements.

EFFECTIVE IMMEDIATELY

After you have followed the easy application directions and NoDrip Tape is in place, dripping will stop. No tools or brads are needed. NoDrip Tape is wound around pipes and pressed in place with the hands.

CONTRACTORS—Include NoDrip Tape protection in your estimates, not only to stop dripping, but for the sake of good appearance on finished installations.

MANUFACTURERS and SERVICE ENGINEERS investigate the many advantages of NoDrip Tape for condensation control and rust prevention.

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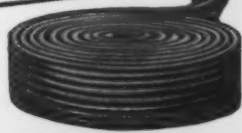
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A roll covers about 10 feet of 1/2" pipe

\$1.69 List

Higher West of Rockies and Canada



TUBE TOOLS . . .

Continued from page 47

The art of tube bending also has progressed to the extent of requiring special and improved types of hand operated portable benders. Here again, we should keep in mind that we are no longer dealing with the lower pressure refrigerants.

Primarily the Freons require larger tube capacities. This becomes obvious when we consider their characteristics. For instance, the specific volume of saturated vapor for methyl at zero F is 5.18 cu. ft./lb., while for Freon-12 it is 1.637 cu. ft./lb., and for Freon 22 it is 1.373 cu. ft./lb.

Almost five times as much refrigerant must now be circulated for the same effect. It again becomes obvious, therefore, that possibilities of pressure drop will prevail if past practices are maintained.

The effect of pressure drops are too elementary to be discussed here. All of us are thoroughly familiar with the havoc that can be caused, knowing capacities of condensing units are generally contingent upon suction

pressures. A bend made improperly, causing flattening of the tubing, or a bend made at a sharp radius, can cause a detrimental pressure-drop.

Recommended practice is to minimize the use of elbows, avoid the use of valves without full openings, and of dehydrators with restrictions. As stated, tube diameters have been increased to get full benefit from the condensing unit. Still, however, numerous installations exist wherein a multitude of elbows and sharp, somewhat flattened bends are prevalent. This just doesn't "add up."

Two Types of Benders

There are, of course, instances where sharp bends are necessary. However, discretion must be used. A good tube bender, many designs of which are available, is essential to proper installations.

Several kinds of good benders are presently available, in either the lever type or the gear type.

The lever-type bender can be purchased either in the single form or the multiple form—that is, having a series of sizes incorporated in one tool. With the lever type the opera-

tion is performed by inserting the tube between the form wheel and the shoe. In this particular operation the tube is stationary and the shoe, mounted generally on a lever, is swept tangentially around the form.

With the gear-type benders, the tube is drawn between the shoe and the form wheel in much the same manner in which it is originally drawn. While satisfactory bends may be achieved on practically all types of tubing encountered in refrigeration with the lever-type bender, there are many who recommend that the gear-type be used because a more uniform cross-section can be maintained, with consequently less restriction at the bend. Also, gear-type benders are considerably more compact and will fit into a much smaller space than the average type lever benders.

In the field of commercial refrigeration and air conditioning, where the use of hard drawn tubing is predominant, most installations, being primarily involved with sweat fittings, have been given very little attention insofar as the tube working tools are concerned. However, in sweat joints, as in the case of flare joints, it is

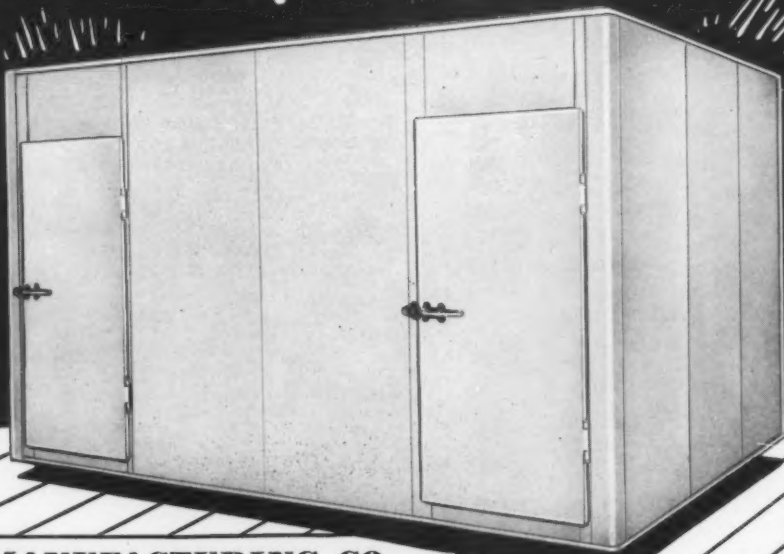
UNIFLOW

STANDARD
TEMPERATURE COOLERS
MULTI-TEMP COOLERS
WALK-IN FREEZERS

Famous Uniflow "Sectionalized" Walk-Ins for frozen foods, meats, bottled goods, ice cream, fruits and vegetables, dairy products.

Send for full information on your needs... we have a unit especially designed for you. Complete brochure available, too! Write!

Walk-in Coolers



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1504 East Lake Road, ERIE, PENNA.

This is the famous Uniflow
9'x12'x7'7" Walk-In Cooler

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advisable to cut the tubing squarely and cleanly, and to reduce the number of joints to a minimum.

A good tube cutter will do the cutting job here, too. Sawing vises are also available. These vises operate similarly to a carpenter's miter box, in that they hold the tube securely and, by virtue of hardened steel guides that guide the saw blade, make it possible to obtain an absolutely square cut. These vises are used primarily on the larger diameter tubes or where wall thicknesses are too heavy to make the use of a tube cutter practicable.

Keep Them Oiled

Tube cutters should be checked frequently to make sure the cutting wheel is sharp. If necessary, a replacement should be made. The feed mechanism should be oiled periodically and should be kept clean at all times. In cutting hard-drawn tubing with these tubing cutters it is often good practice to lubricate at the point of the cut.

In the case of flaring tools, it is always necessary to keep all the moving parts well lubricated. This is particularly true of the screw feed mechanism, and the base of the cone when the flare is being made.

Keep Them Clean

Tube benders should be kept clean, particularly on the working surfaces of the forming shoe and form wheel. In addition to lubricating all moving parts it is very important that the shoe carry a film of lubricant at all times. This will prevent galling of the tube and permit easier operation.

In conclusion, it might be well to state that aside from obtaining the most out of a system mechanically, a neat and symmetrical design of tubing runs in an installation pays for itself as good advertising material. Upon viewing a sample installation, a prospective customer is always impressed and realizes that the outward appearance often reflects the efficiency that he might expect for his investment in the operation of this equipment. Proper use of good tube working tools makes such installations easy to erect.

**BUY FROM YOUR
REFRIGERATION WHOLESALER**

MORE "MART" SPACE WILL BE CONDITIONED

A contract for equipment to air condition an additional 400,000 sq. ft. of the Merchandise Mart in Chicago has been placed with Carrier Corp., it was announced by William S. Bodinus, Chicago district manager for Carrier.

"With the completion of this order the Merchandise Mart will have more air conditioned space than any other commercial building in the world," Bodinus stated. "It is exceeded in this

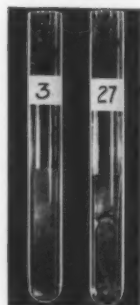
respect only by one military building—the Pentagon in Washington."

The new contract provides for 1,100 tons of cooling capacity to be provided by a Carrier centrifugal machine which will take its place alongside six other machines installed previously in the basement of the world's largest commercial building.

With this addition, about 2,400,000 sq. ft. of the building's 3,000,000 sq. ft. of rentable space will be provided with year-round air conditioning.

WHY WAIT HOURS?

**THAWZONE
ACTS
FAST**



When you encounter a moisture problem, you might as well clear it up as promptly as possible. Why wait for the moisture to be picked up?

Thawzone travels with the refrigerant to every part of the system where moisture may be. The entire refrigerant charge is in contact with Thawzone after a minute or two of "on cycle".

CORROSION TEST

Here is another test that shows how Thawzone prevents corrosion. Both tubes contain 25cc of "Freon" 12, .025cc water, 4cc oil, and steel strips. Tube No. 3 also contains 1% Thawzone. Tube No. 27 contains 1% antifreeze instead of Thawzone. This untouched photo shows how the metal protected by Thawzone remained free of corrosion.

Besides preventing corrosion by DESTROYING water, Thawzone neutralizes acids that promote corrosion.

THAWZONE®

**The Only Product That
Destroys Water...
and Goes to All of it**

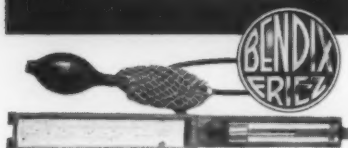
1. Reaches all parts of the unit.
2. Actually destroys moisture . . . not a mere antifreeze.
3. A patented invention . . . cannot be copied.
4. No pressure drop possible.
5. Not subject to oil clogging.
6. Neutralizes acids, helps prevent corrosion.
7. Helps prevent copperplating.
8. Prevents moisture trouble in new units, too.
9. Costs less. Only about 8¢ per lb. of refrigerant treated.
10. One product for all "Freon" and methyl units.
11. Only ¼ oz. per lb. of refrigerant required.

Practically every wholesaler carries Thawzone.

Highside Chemicals Co., Clifton, N. J.

Circle No. 57 on Reader Service Card for more information

MEASURE HUMIDITY
simply, quickly,
accurately
with a
BENDIX-FRIEZ
PSYCHROMETER



Hand Aspirated Psychrometer, Model HA/2, is ideal for taking humidity readings in confined areas.

Want an accurate means of proving the need for air conditioning? Want an easy way to check the system after installation?

A Bendix-Friez Psychrometer can give you the answer on both counts. The Hand-Aspirated Psychrometer, for example, furnishes fast and accurate humidity readings, yet requires no special skill to operate. In addition, it comes in a pocket-size plastic carrying case, making it an especially practical tool for air conditioning and heating engineers.

The complete line of Bendix-Friez Psychrometers—both hand and motor-aspirated—assures you of getting the exact type that will serve you best. Check your needs with Bendix-Friez today.



BENDIX-FRIEZ
PORTABLE TEMPERATURE
AND HUMIDITY RECORDER

Model 160

Another outstanding Bendix-Friez instrument for proving the need and checking the installation. Provides 3 x 5" charts, 10 or 30 hour records. Built to U. S. Weather Bureau standards.



1410 Taylor Avenue
Baltimore 4, Maryland

EXPORT SALES: Bendix International Division
72 Fifth Avenue, New York 11, N. Y.
Circle No. 60 on Reader Service Card

USEFUL

BULLETINS • BOOKLETS • CATALOGS

The publications listed below are available to readers without charge. Simply circle on the postcard in this issue the key numbers of the items you wish to receive. Your requests will be forwarded directly to the companies concerned.

WALK-IN COOLERS and plug-in panel units are described in a 4-page bulletin issued by Loudon Mfg. & Sales, Inc. Furnishing data on size, weight and cost of walk-in coolers and accessory equipment, the bulletin has illustrations of the equipment. Information on "Lockseam" assemblies with drawings of step-by-step procedures for their erection is also included.

Circle No. 111 on Reader Service Card

A TECHNIQUE for use in designing economical automatic electric installations for heating and air conditioning is offered in a new 8-page bulletin (No. F5265) released by Barber-Colman Co. If you're interested in how to lower costs of installation through the central control panel technique, this bulletin explains how to achieve it besides simplifying installation and minimizing service.

Circle No. 112 on Reader Service Card

TO ENABLE YOU to make cooling coil selections with greater ease, Marlo Coil Co. has headlined design, construction and dimensional data, plus psychrometric charts in its new 8-page bulletin. The exclusive Marlo "Sieromatic" charts and rule are included to make the job of choosing faster as well as easier.

Circle No. 113 on Reader Service Card

THERMAL AND ACOUSTICAL qualities of "Ultralite" glass fiber insulation are detailed in the bulletin issued by Gustin-Bacon Mfg. Co. Fifteen pages long and illustrated with "How to . . ." data and pictures, this brochure also contains step-by-step procedures as aids to contractors and insulation men. Accessory materials used to apply this insulation are listed as well as facing types available.

Circle No. 114 on Reader Service Card

TRUCK REFRIGERATING equipment and illustrations of typical installations are featured in Kold-Hold's truck refrigeration handbook. This twelve-page, two color booklet includes data for use in determining truck plate sizes as well as information on weight and Btu capacities of low and medium temperature plates.

Circle No. 115 on Reader Service Card

NEARLY 100 PICTURES showing Ingersoll-Rand's products are included in the 36-page booklet issued by the firm. Covering such products as refrigerating units, vacuum and condensing equipment and many more, the pocket-size booklet also gives a brief history of the company, its plants and products.

Circle No. 116 on Reader Service Card

(More Useful Literature on page 76)

NOVEMBER, 1952 • COMMERCIAL REFRIGERATION



Orrin J. Stone
Assistant Sales Manager

ORRIN J. STONE OF PAULLE'S—LARGEST MANUFACTURERS OF
CUSTOM-BUILT STORE FIXTURES IN THE NORTHWEST—TELLS...

"Why we chose KELVINATOR"

L. PAULLE-MIDWAY
Fixture & Show Case Co.

COMPLETE STORE FIXTURES • SHOW CASES
407 North Hamline Avenue

Paulle's
SINCE 1875

A Great Name In
Store Fixtures

St. Paul 4, Minnesota



The L. Paulle-Midway Plant
at St. Paul, Minnesota
Established in 1875

Kelvinator Refrigeration Equipment has been *winning* friends for 38 years because of its outstanding performance record... and *keeping* those friends because of its unequalled reputation for trouble-free service. Check Kelvinator's wide range of hermetic condensing units, up to and including $\frac{1}{2}$ H.P. ... and open type units, $\frac{1}{4}$ to 5 H.P.

See Kelvinator's complete line of competitively-priced ice cream cabinets, water coolers, beverage coolers, frozen food cabinets. Contact your nearest Kelvinator Distributor or Zone office for complete information—and pick up our new 1952 Commercial Equipment Catalog. Kelvinator, Division of Nash-Kelvinator Corporation, Detroit 32, Michigan.

Nash Kelvinator Corp.
14250 Plymouth Road
Detroit 32, Michigan

Gentlemen:

Our concern, known in the trade as Paulle's, has grown and advanced to where it is now the largest manufacturer of custom built fixtures for restaurants, stores, clubs etc. in the northwest. We like to believe that this growth has come about basically from the manufacture and sale of the highest quality of products and, of course, personalized service to the purchaser of our equipment. Therefore, when we decided on a line of refrigeration equipment such as condensing units, ice cream cabinets and water coolers, we chose Kelvinator, a product we knew had a long and outstanding performance record.

Gentlemen, we were not disappointed. We can truthfully say now that we chose wisely, as Kelvinator products are all that your representatives said they were. Users of our fixtures cooled by Kelvinator equipment have reported very highly and favorably about them. I must say that our service record regarding your equipment is certainly a nominal thing in comparison to the amount of units which we have installed.

Yours very truly,

Orrin J. Stone

Orrin J. Stone
Ass't General Sales Manager

Profit Today... Build for Tomorrow with

Kelvinator

The Name that Sells... The Name that Satisfies!



Kelvinator
Beverage Coolers



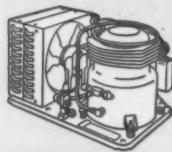
Kelvinator Frozen
Food Merchandisers



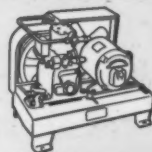
Kelvinator
Water Coolers



Kelvinator
Ice Cream Cabinets



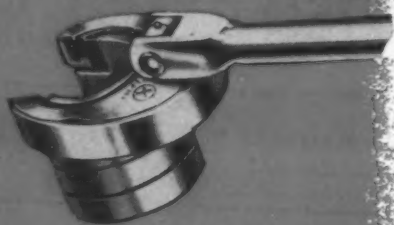
Kelvinator Hermetic
Condensing Units
(up to $\frac{1}{2}$ H.P. inclusive)



Kelvinator Open Type
Condensing Units
($\frac{1}{4}$ H.P. to 5 H.P.)

Circle No. 61 on Reader Service Card for more information
and **AIR CONDITIONING • NOVEMBER, 1952**

this wrench



can slash your costs 3 ways

TAC Open End Ratchet Wrench

delivers incredible savings wherever "tight" situations prevail involving tubing, pipe, conduit, cable or long studs. Saves at least three ways:

1. **CUTS TIME** on production or maintenance operations because it slips around tubing and down fittings, where you ratchet off or on in mere seconds. Functions perfectly with as little as 7" arc clearance for handle. Reduces workman injury too—TAC can't slip off the work and skin up knuckles.
2. **CUTS COST** on fittings, tubing, etc. Snugs down on fittings, never "borks" or scars the hex fitting.
3. **REDUCES INVENTORY OF HAND TOOLS** required in your tool crib. Several sockets, a few head sizes, and you eliminate over half the wrenches you'd otherwise maintain.

"BORROW" ONE— PROVE FOR YOURSELF!

Rated companies may request on Letterhead a sample handle, head and socket, for full trial. We ship on memo billing—returnable for full credit. ACT NOW—"BORROW" THIS MIRACLE WRENCH and prove its value!

Send for free catalog



HERE'S HOW
IT WORKS!



TUBING APPLIANCE COMPANY
10321 Anza Avenue, Los Angeles, California

Circle No. 62 on Reader Service Card for more information

USEFUL LITERATURE . . .

Continued from page 74

SHELF STORAGE principles are outlined in a new 2-color 16-page illustrated catalog, "The Science of Economical Shelf Storage", published by the Frick-Gallagher Mfg. Co. The catalog discusses the many advantages of using Rotabin rotary shelving to store parts, tools, etc., more efficiently.

Circle No. 117 on Reader Service Card

TWICE AS MANY silver solders are on the market this year as there were last and with an eye toward aiding those who have problems in choosing the correct flux for use in jointing, cutting or tinning special metals, All-State Welding Alloys Co., Inc. has issued its new buyer's guide. This 32-page booklet holds important information on such metals as steel, aluminum and aluminum alloys, cast iron, copper and copper alloys, magnesium, nickel, stainless steel and zinc die cast.

Circle No. 118 on Reader Service Card

FOR THE DEALER who offers a complete store planning and equipment service in food stores, a new bulletin available from Add Sales Co. describes a new low-priced line of "Flexo-Space" self-service islands designed for display and storage of non-refrigerated items. The new islands are said to provide much more storage and display space than conventional counters, and to be considerably less expensive than other types of self-service islands. The units have 13 shelf adjustments to allow display of virtually any size merchandise, and a special attachment under the base increases sturdiness. Bulletin outlines all features.

Circle No. 119 on Reader Service Card

Do you have a
VIBRATION PROBLEM?

Solve it quickly and easily—install Packless Seamless Bronze Vibration Absorbers—available to fit copper tubing in sizes from 1/4" O.D. to 10 1/2" O.D.

• Write for literature or see your local distributor

PACKLESS

METAL PRODUCTS CORPORATION
31-10 WINTHROP AVE., NEW ROCHELLE, N.Y.

Circle No. 63 for more information

NEW

PRODUCTS

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your requests will be forwarded directly to the companies concerned.

Acetylene-Air Torch

Product: New automatic acetylene-air gas torch.

Manufacturer: Velocity Power Tool Co., Pittsburgh, Pa.

Features: New "Torch-O-Matic" lights at squeeze of trigger and shuts off upon release, eliminating separate operation and equipment for relight-



ing, manual valve adjustment, pumping or priming and warm-up. Especially well suited for "on-again, off-again" work as in many refrigeration and air conditioning jobs. Squeezing trigger opens torch valve and sparks flint for ignition. Trigger also can be locked open for continuous flame. One-hand operation. Only 12 ounces in weight, torch heats up to 2800 F. Combustion tubes available in three sizes— $\frac{1}{8}$ ", $\frac{3}{16}$ " and $\frac{1}{4}$ "—permit use in all types of work. Accessories include pressure regulator, tank and operating pressure gauges, hose and hose clamps, lighting flints, combustion tubes and nozzles and extension tips.

Circle No. 131 on Reader Service Card

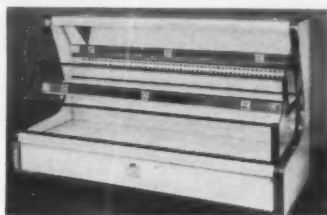
Two-Deck Refrigerator

Product: Two-deck (OB8R) meat and dairy refrigerator.

Manufacturer: Friedrich Refrigerators, Inc., San Antonio, Tex.

Features: New design has built

stronger eye-appeal into this popular model, manufacturer says. Planned for continuous line-up, with cases joined together from front for sim-



licity and economy of installation. New feature is deeper refrigerator pocket on lower shelf to accommodate half-gallon milk containers. "Coolite" lighting distributed equally over upper and lower display levels. Drain and refrigeration lines are concealed behind removable kick-plate under toe space. All other Friedrich features incorporated into new model, including corkboard insulation, double Thermopane glass, porcelain interiors and exteriors, polished plate glass end sections.

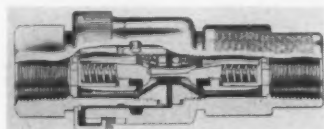
Circle No. 132 on Reader Service Card

Quick Coupler

Product: Make and break double shut-off valved coupler.

Manufacturer: Henry Valve Co., Melrose Park, Ill.

Features: Built originally for either ammonia or Freon refriger-



ants in connection with refrigerated trucks, coupler also has wide industrial applications wherever pneumatic or hydraulic lines are involved. As two halves of unit are coupled together, two piston valves open by moving away from their respective

seats. Soft molded insert, mechanically held in place, forms seat in each half of coupler. True alignment of pistons insured by long guides. Pistons can be readily replaced after long service by unscrewing seat bushings. Protector caps provided for covering coupler halves when disconnected. Available in $\frac{1}{2}$ " F.P.T. connections.

Circle No. 133 on Reader Service Card

Close-Ruff Elbows

Product: "Close-Ruff" elbows in all of the popular sizes.

Manufacturer: Northern Indiana Brass Co., Elkhart, Ind.

Features: Close-Ruff elbows have approximately the same ruff-in dimensions as cast solder elbows, with the added advantages of being gas-tight for refrigeration and lightweight for fast heating. They also



match the tube for eye-appeal. The $\frac{1}{2}$ " Close-Ruff elbow was introduced on the market about a year and a half ago. Prior to that time all wrought elbows had long radius turns, which made them very difficult to fit in tight corners. Elbows now available in sizes of $\frac{3}{8}$ " through 1".

Circle No. 134 on Reader Service Card

Gear-Type Tube Bender

Product: New universal tube bender, gear type.

Manufacturer: Imperial Brass Mfg. Co., Chicago.

Features: Bender will bend any type of tubing including hard drawn copper and hard temper steel. Bender is so constructed that it can be positioned on tube at any point where bend is desired, and thus bends can readily be made even when one end of tube is connected. Can be used to make right or left hand bends, return bends, offset bends, and right angle

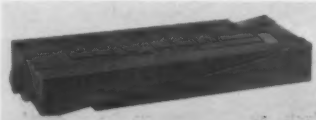
bends. High gear ratio makes bending easier, manufacturer says, an advantage when working with hard temper tubing or large size tubing. Benders are designed so that they can be held by hand, clamped in vise or bolted to bench. Expansion handle can be obtained which permits holding bender in pipe vise. Separate bender is used for each size of tubing, and benders are available for tubing from $\frac{3}{8}$ " to $1\frac{1}{8}$ " o.d. ($\frac{1}{4}$ " to 1" normal size). Designated as No. 270-F.

Circle No. 135 on Reader Service Card

Leveling Device

Product: Device for leveling heavy machinery.

Manufacturer: Filter & Injector Co., Springfield, Mo.



Features: New device, known as "Lev-ler", is engineered to assure easy, accurate and economical machine leveling. Available in 6-inch

size with lifting capacity of approximately three tons, and 8-inch size with five-ton lifting capacity. Self-locking under load. Full information available from the company.

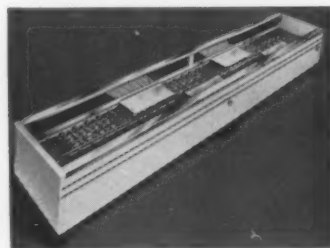
Circle No. 136 on Reader Service Card

Refrigerated Trough

Product: "Rolling Cold" continuous refrigerated trough.

Manufacturer: Tyler Fixture Corp., Niles, Mich.

Features: Primary purpose of the "Rolling Cold" refrigerator is to keep all perishable products, particu-



larly meat, under temperatures of from 30 to 35 F during period while they are being wrapped, weighed and price-stamped. Eliminates necessity for expensively conditioned packaging rooms, manufacturer says. Makes it possible for workers in this department to work in normal room temperature, with product at temperature lower than would be held in complete packaging room. Equipment can be located conveniently in store, without requiring extra construction or remodeling. Meets all public health rules. Product also has adaptability for use as a display fixture, and company has announced plans for this development in near future.

Circle No. 137 on Reader Service Card

Unit Heater

Product: New PAC automatic gas unit/central heater.



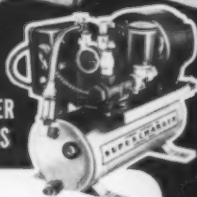
Manufacturer: Reznor Mfg. Co., Mercer, Pa.

DISTRIBUTORS, HERE'S PROOF—

there's more profits, less troubles with CARBONIC dispensing equipment!



SUPERCHARGER CARBONATORS



...over 1,000 Carbonic Dispenser units are now installed in Greater New York area and our salesmen are still getting enthusiastic receptions everywhere they call! Carbonic systems are easy to sell, easy to install... and, best of all, there's no trouble afterwards. That means you don't waste time and money making callbacks when you handle the Carbonic line.

MIX-MONITOR 5-in-1 FAUCETS



SODAMASTER Self-Contained Units and Remote Systems

● You'll make a lot more money with Carbonic beverage dispensing equipment. There's *Supercharger Carbonators*—the only patented jet type carbonators using the sensational new recirculating principle for making up to five times more carbonated water in less than half the time needed by any other carbonator on the market! There's the famous *Mix-Monitor 5-in-1 faucet*—unique new self-cleaning outlet that serves multi-flavored beverages quickly from one spot. And, there's *Sodamaster* and *Sodamatic* cabinets and systems... revolutionary new equipment offering immediate sales opportunities in every locality in the world!! Act now! Your inquiry gets immediate attention at Carbonic!



GENERAL OFFICES • CANFIELD, OHIO
WEST COAST OFFICE • 1831 RANDOLPH STREET
LOS ANGELES, CALIFORNIA

MAIL THIS COUPON TODAY!

Please send me prices and literature outlining the opportunity now open to make bigger profits selling Carbonic Beverage Dispensing Equipment

Name _____

Address _____

City _____

State _____

Circle No. 64 on Reader Service Card for more information

You sell more because you offer more with the...



Tecumseh

Complete line of JOBBER HERMETICS

Now, for the first time, the entire line of Tecumseh hermetics for domestic and commercial applications from $\frac{1}{4}$ H.P. to $1\frac{1}{2}$ H.P. is available to the jobber trade. With eleven million Tecumseh compressors in the field today, a complete line of replacement compressors spells added sales for you.

The franchised Tecumseh jobber will now stock and sell this line of exactly engineered compressors and units for all hermetic applications. These are the same compressors and units specified as original equipment by most manufacturers of domestic and commercial cabinets.

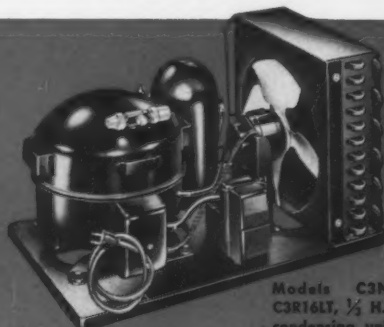
Note too, that the full line now in stock at your local jobber includes a wide range of open-type compressors and units up to 15 H.P. See the Tecumseh line first for all your refrigeration requirements and be sure you have the right unit for every replacement job.



Model 588LE, $\frac{1}{4}$ H.P. static condensing unit for domestic refrigeration applications.



Models 588L and 564L, $\frac{1}{4}$ and $\frac{1}{2}$ H.P. fan cooled condensing units for domestic refrigerators and small freezers.

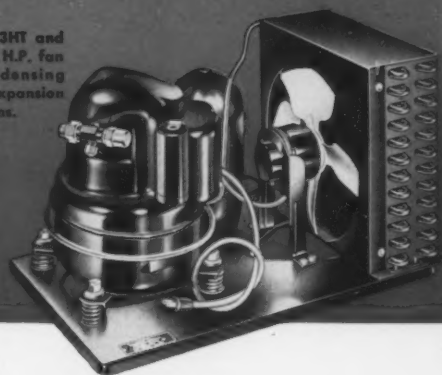


Models C2N14HT and C3R16LT, $\frac{1}{2}$ H.P. fan cooled condensing unit for use on expansion valve systems.



Models C4414HT and C4N14LT, $\frac{1}{4}$ H.P. fan cooled condensing unit for use on expansion valve systems.

Models C2513HT and C2616LT, $\frac{1}{2}$ H.P. fan cooled condensing unit for expansion valve systems.



For full information write:

TECUMSEH PRODUCTS

TECUMSEH, MICH.

Company

EXPORT DEPT.: 2111 WOODWARD AVE., DETROIT, MICH.



★ The world's largest producer of condensing units for the refrigeration industry. ★

Circle No. 65 on Reader Service Card for more information
and AIR CONDITIONING • NOVEMBER, 1952

Features: New PAC gas heater has capacity of 100,000 Btu, and can be used as unit heater in commercial and industrial installations or as central heating plant in home installations. Adaptable for natural, manufactured, mixed and LP gases. Included are Reznor features for direct unit heating plus usability with any combination of ducts. Louver frames may be on both intake and heat distribution ends to add finish to appearance when used as unit heater.

Circle No. 138 on Reader Service Card

Defrosting Switches

Product: Three new defrost switches with "fail-safe" features.

Manufacturer: Paragon Electric Co., Two Rivers, Wis.

Features: Made in three types to suit wide range of applications. Series TP-300 features time-initiated, pressure terminated control of defrost cycle in which adjustable trip pins on 24-hour clock dial start the cycle, while pressure in refrigeration system stops it. TT-300 series units are time-initiated but are terminated by rise in temperature in system. TS-300

series similarly initiates defrosting by time setting, but permits termination either by remotely located pressure switch or temperature controller, or both. Switches are applicable to all methods of defrosting in commercial



use, whether electric heat, hot gas, reverse cycle or straight shutdown. Switches incorporate four "fail-safe" features to safeguard operation and make mechanism "self-policing". Being offered only to manufacturers of refrigeration equipment at present; not yet available for general field application or replacement use.

Circle No. 139 on Reader Service Card



"Keep cool with ESTON!"

**METHYL CHLORIDE
SULFUR DIOXIDE**

Distributor of "Kinetic" Chemicals "Freon" refrigerants.

"FREON 11"—"FREON 12"
"FREON 21"—"FREON 22"
"FREON 113"—"FREON 114"

In Standard Containers

ESTON CHEMICALS, INC.

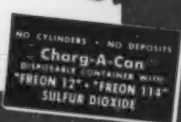
3100 E. 26th St., Los Angeles 23

SALES OFFICES

IN ALL PRINCIPAL TRADING AREAS



ESTON REFRIGERANTS ARE FOR SALE BY LEADING REFRIGERATION WHOLESALERS EVERYWHERE



Circle No. 66 on Reader Service Card for more information

Ice Cube Maker

Product: New 16-tray self-contained ice cube maker, Model ICM-16.

Manufacturer: Brewer-Titchener Corp., Binghamton, N. Y.

Features: Model ICM-16 has fast

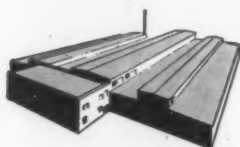


freezing capacity with BTC prime surface plates, compact size, low operating cost. Unit will produce complete freezing in average of 2½ hours or 307 pounds of cubes per day. Unit contains 16 quick-release trays, large capacity pull-out storage drawer. Powered with ¼ hp Kelvina-

Good Men to Know!



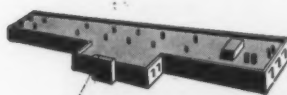
GEORGE E. KLAHN
Factory Representative Northwest Territory
serving you through these
reputable wholesalers



Plant 1—1400 Broadway N.E.
Minneapolis 13, Minn.



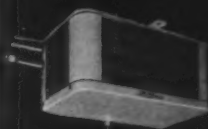
Plant 2—1729 Broadway N.E.
Minneapolis 13, Minn.



Plant 3—4th and Park Ave.
Faribault, Minn.



GEORGE E. EWERT
Vincent Refrigeration &
Heating Supply Co.
Minneapolis, Minnesota



LEO M. DALY
Refrigeration Supply, Inc.
1430 Front St., Fargo, No. Dakota



PAUL KLEINHESSEL
National Refrigeration Parts Co.
Sioux City, Iowa



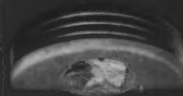
C. W. (Berl) HOSIER
White Refrigeration Supply Co.
Des Moines, Iowa



J. S. KIMMEL SR.
Republic Electric Co.
Federal & Charlotte Sts.
Davenport, Iowa



RALPH L. COOPER
Interstate Machinery & Supply Co.
Omaha, Nebraska



CONSULT YOUR McQUAY WHOLESALER FOR EVERY REFRIGERATION NEED

McQuay is proud of its complete line of *proved and preferred* refrigeration equipment and of the men who represent the company to you. There is a McQuay wholesaler in your territory, qualified by long experience and backed by the entire McQuay sales and engineering organization, who can give you the right answer to your specific problem — whether it's selling help, technical advice or quick action you want. Consult your McQuay wholesaler or write McQuay, Inc., 1643 Broadway N. E., Minneapolis 13, Minn.

McQuay INC.



REFRIGERATION
HEATING
AIR CONDITIONING

MANUFACTURERS OF HEAT TRANSFER EQUIPMENT SINCE 1923

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and AIR CONDITIONING • NOVEMBER, 1952

Meet Today's Demand for

FASTER WORK and BETTER INSTALLATIONS with IMPERIAL TOOLS

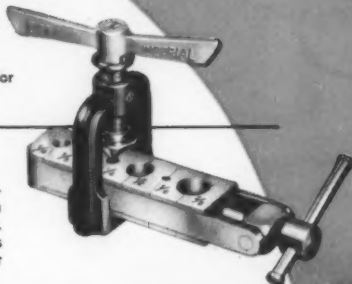
HI-DUTY® TUBE CUTTER

The outstanding favorite with refrigeration men everywhere. Has free-wheeling ball-bearing action. Roller type with flare cut-off groove. Retractable reamer. IMPERIAL No. 274-F . . . for $\frac{1}{8}$ " to 1" O.D. tubing. Other models for tubing up to 2 $\frac{1}{4}$ " O.D.



ROL-AIR® FLARING TOOL

Flares — then automatically burnishes. Embodies a lost-motion-mechanism, which causes flaring cone to burnish flare to a highly polished finish, assuring tighter joints. Flares are rolled in the air. IMPERIAL No. 500-F flares 6 sizes of tubing $\frac{3}{16}$ " to 5/8" O.D. Also many other models.



LEVER-TYPE TUBE BENDERS

Calibrated open side benders. Make smooth well-formed bends to a short radius—any angle up to 180°. IMPERIAL No. 364-F—individual bender required for each size of tubing from $\frac{3}{16}$ " to $\frac{1}{2}$ " O.D.



GEAR-TYPE TUBE BENDERS

Will bend any kind of tubing. This new universal gear-type tube bender makes smooth precision bends even on hard temper copper or heavy steel tubing. Also pipe. Compact, strong, light in weight. Individual benders for $\frac{3}{16}$ " to 1 $\frac{1}{2}$ " O.D. tubing. IMPERIAL No. 270-F.



SERVICE VALVE KIT FOR HERMETIC UNITS

Handles an increased number of hermetically sealed units. Valve, wheel handle and gauge are kept completely assembled, ready for use. Includes 9 adapters, 6 wrenches, 5 gaskets, plug, set screw wrench, and instruction chart. Sturdy metal case. IMPERIAL No. 189-F.



SWEDGING TOOL

For making emergency tubing joints without using a fitting. IMPERIAL No. 195-S Swedging Kit in metal box includes flaring bar and 4 swedging tools for joining $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ " and $\frac{3}{4}$ " O.D.



See
Your Jobber

Ask for
Bulletin 80

THE IMPERIAL BRASS MFG. CO., 534 S. Racine Ave., Chicago 7, Illinois
In Canada: 334 Laurier Avenue, Toronto, Ontario

IMPERIAL

FITTINGS • VALVES • DRIERS • CHARGING LINES
TOOLS for Cutting, Flaring, Bending, Pinch-Off, Swedging



Circle No. 68 on Reader Service Card for more information

tor hermetically sealed condensing unit with 5-year warranty. Exterior finish is silver hammertone; dimensions are 26" wide, 22" deep, 38 $\frac{5}{8}$ " high.

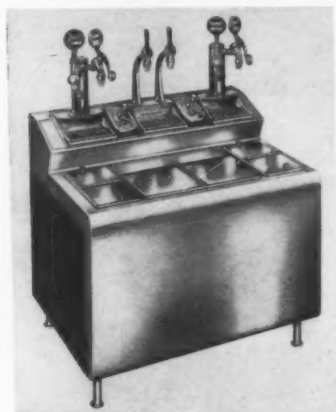
Circle No. 140 on Reader Service Card

Bobtail Fountain Unit

Product: New bobtail soda fountain unit.

Manufacturer: Bastian-Blessing Co., Chicago.

Features: Unit is 3'6" long, made of stainless steel, and designed for in-



stallation where many drinks are wanted quickly. Unit is equipped with carbonated and plain water draft arms, also with two patented "Cold-point" beverage dispensing systems. Latter enables operator to dispense four different flavors of still or carbonated drinks. Large storage compartment contains four syrup tanks and two extra large chipped ice bins. Two syrup pumps and jars are also provided. Storage compartment has capacity of 9.5 cu. ft.

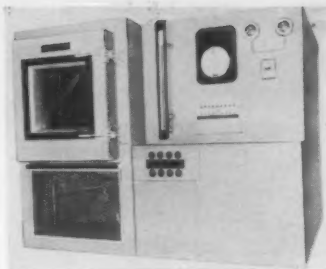
Circle No. 141 on Reader Service Card

Test Chambers

Product: A standard line of altitude test chambers for industrial use.

Manufacturer: Tenney Engineering, Inc., Newark, N. J.

Features: Chambers are built in 10 different sizes designed to cover the majority of requirements for chambers of this type. Known as "TenneyZphere", chambers provide vacuum conditions simulating altitudes from sea level to approximately 80,000 feet. Also creates high and low temperatures and variable relative humidity conditions. Tempera-



tures range from 200 F to -100 F, relative humidities from 20% to 95%. Temperature recording controls, pressure controlled and altitude

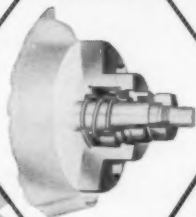
gauge or mercury manometer are standard equipment. All controls mounted on chamber for ease of operation and adjustment to different conditions. Special features are obtainable on individual chambers when desired, and chambers can be built to special size. Standard sizes range from 18" x 22" x 18" to 48" x 60" x 96".

Circle No. 142 on Reader Service Card

**BUY FROM YOUR
REFRIGERATION WHOLESALE**

ROTARY SEAL Replacement Units

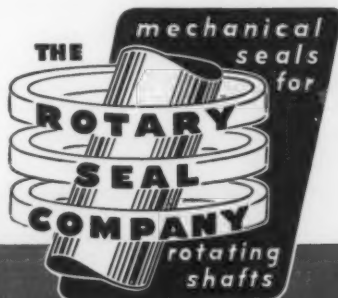
UNIT No.



9444

Available in a complete range of sizes—including larger models for use in Commercial and Semi-Commercial Compressors, like those listed below. Easy to install • Efficient in operation • Simple in Construction • Economical

**BAKER • BRUNNER • CARRIER • COLDSPOT • COPELAND
CURTIS • FRIGIDAIRE • GENERAL ELECTRIC • KELVINATOR
PAR • UNIVERSAL COOLER • WESTINGHOUSE and many others**



"Seal with

**AT ALL
LEADING
JOBBER**

Certainty!"

**2020 NORTH LARRABEE STREET
CHICAGO 14, ILLINOIS, U.S.A.**

CANADIAN AGENT: 2025 ADDINGTON AVENUE
MONTREAL 28, QUEBEC, CANADA

Circle No. 69 on Reader Service Card for more information

Solder-Joint Fittings

Product: Wrought copper solder-joint fittings designed particularly for refrigeration and air conditioning service.

Manufacturer: Chase Brass & Copper Co., Waterbury, Conn.

Features: Will hold air, water or gas. Advantages of wrought copper solder-joint fittings, company says, include ease of installation in tight places, expansion and contraction at the same rate as copper tube, and smooth inside walls inside wells that offer minimum resistance to refriger-



ant flow. Company claims that in tests, fittings soldered to 1/2" copper water tube have withstood tensile pulls of 3800 pounds and internal

hydrostatic pressure in excess of 5000 psi. Available sizes range from 1/4" to 4" nominal size.

Circle No. 143 on Reader Service Card

Voltage Tester

Product: "Hi-Test" voltage tester which indicates AC or DC voltage from 115 to 600 volts.

Manufacturer: Holub Industries, Inc., Sycamore, Ill.

Features: Tester has only one test lead. Second test prod is permanent-



ly mounted in one end of tester, making it easy to hold unit in one hand and still press prod firmly against contact or wire. Voltage scale is located in end of tester opposite prod where it is in full view. Scale is drum type and is covered and protected by magnifying lens. Design is said to eliminate flashover between ends of solenoid coil, as wires are brought out of case at opposite ends of coil. Case (black plastic) is sealed against dirt, dust and moisture. Safety ring at end of prod prevents fingers slipping off. Overall length 8 1/2"; test lead with 4" plastic handle, 48"; weight with carrying case 10 oz.

Circle No. 144 on Reader Service Card

Sandwich Units

Product: Flex-O-Unit refrigerated sandwich units.

Manufacturer: Stainless Food Equipment Co., Newark, N. J.

Features: Pan layouts are varied to suit individual needs. Toaster space and water station are optional. Refrigerated bases are flexible and various models are available with one or two doors and with or without refrigerated locker drawers of

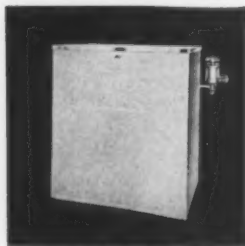
For Recognized Quality - Extra Gallons

Sell Your Condensing Unit

- Filtrine Water Coolers



Mess Hall—Cafeteria Cooler



Photographic—X-ray Cooler



Typical "Packaged" Circulating Chilled Water System

Sell your condensing unit with remote models for new and replacement jobs — all applications. Capacities 10—1000 g.p.h.; storage 7—300 gals. Filters, Rectifier-Dechlorinators available for all sizes.

Promote your own condensing unit sales with Filtrine's 20-year-life construction . . . high capacity . . . Super Storage . . . more than 40 years' dependability.

COOLERS FOR MESS HALLS — CAFETERIAS

Conform with Fed. Spec. 00-C-566b

COOLERS FOR X-RAY & PHOTOGRAPHY

PACKAGED CIRCULATING CHILLED WATER SYSTEMS

REMOTE COOLERS FOR ALL USES

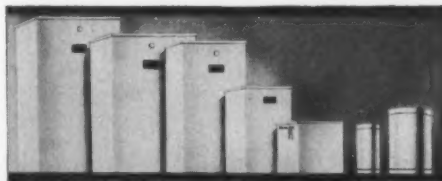
Sell your condensing unit with Filtrine Stainless Steel or Duco finished cabinets, equipped to suit with top/side shelves, bubblers, glass-filters. Can be Taste-Master equipped to remove chlorine, rust, sediment from water.



Taste-Master

Sell your condensing unit with Filtrine models repeatedly named by V.A., Signal Corps, Air Force, etc. for X-ray, and photo-labs. Under counter design and floor-mounted models with stainless steel work-table top. Filters (extra) to prevent scratched and pin-holed negatives.

Sell your condensing unit! Systems for drinking or processing water—completely packaged with pump, controls, your condensing unit factory installed. Capacities 5—400 g.p.h.; storage 5—150 gals. Filters and Rectifier-Dechlorinators (extra) to insure taste-free, sparkling water.



Remote Model Coolers

Write for Catalog and Specification Guide

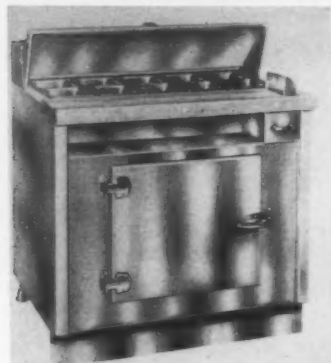
FILTRINE MANUFACTURING COMPANY • BROOKLYN 5 • N. Y.

"Water Coolers and Filters for 40 Years"

Circle No. 70 on Reader Service Card for more information



bread drawers. Available in lengths of 24, 30, 36, 48, 60 and 72" and combinations of these sizes. Choice of 24" and 31" depths provided on



all standard sizes. The 24" backbar models are 42" high overall with 36" working height. The 31" undercounter models are 40½" high overall with 32" working height, and 1" additional height is standard for the 31" deep soda fountain backbar models. Exterior front, plate shelf, top roll cover and hood of stainless steel. Ends and back of enamel. Interiors of stainless steel, rounded bottoms. "Kolstream" coil and blower refrigeration is standard. Self-contained assembly available by addition of compressor enclosure.

Circle No. 145 on Reader Service Card

Filters and Strainers

Product: Completely redesigned line of filters and strainers.

Manufacturer: McIntire Connector Co., Newark, N. J.

Features: New line is designed to meet the more complex requirements of modern refrigeration systems. Featuring highly efficient "Permaclean" filtering element, new filters and strainers are said to be especially valuable in permanent, heavy-duty service for run-in of new installations, as well as for corrective service on established units. Permaclean filter has graded density which is progressively increased in direction of flow with final filtering to 10 microns or smaller. New line of filters is available in factory-sealed and cartridge type; strainers in pencil type and factory-sealed type, straight-thru type and angle type, straight-thru type and "Y" type. Described in Bulletin 9FS available from McIntire wholesalers or direct.

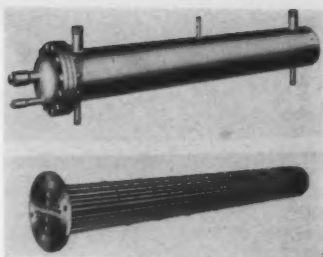
Circle No. 146 on Reader Service Card
and AIR CONDITIONING • NOVEMBER, 1952

DX Evaporators

Product: CWF shell and tube liquid coolers, direct expansion evaporators, for use in refrigeration and air conditioning systems.

Manufacturer: Taco Heaters, Inc., Providence, R. I.

Features: CWF evaporator is constructed according to ASME specifications. It is tested at 300 psi and is certified for 150 psi working pressure. Refrigerant velocity is controlled to provide minimum pressure drop with efficient transfer and without oil logging. Liquid Freon is



moved forward and continually agitated to prevent flooding in bottom or becoming oil saturated. Refrigerant is confined to removable copper tube



PATTERN FOR PERFECTION...

The best of materials, strict standards of workmanship, the finest tools—this is the real mechanic's pattern for perfection. Naturally, you, as a real mechanic, quickly recognize the work of others who measure accomplishment by the same standards.

Bonney wrenches fit this pattern of perfection. That is why mechanics call them America's finest—unmatched for lightness, strength, balance, and precision.

Bonney wrenches are the pride of the men who make them . . . the pride of the men who use them.

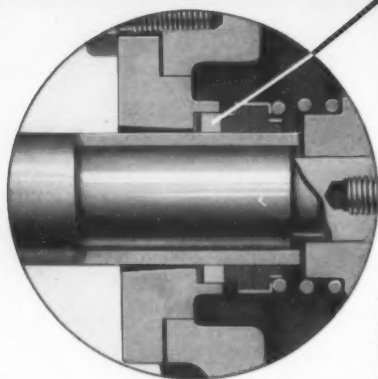
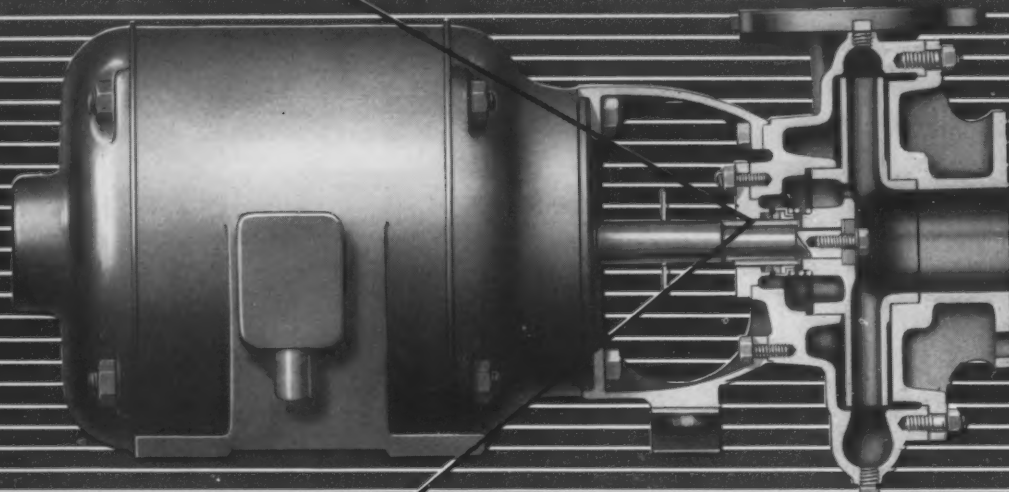


The skilled mechanic whose constant concern is with this pattern for perfection is exemplified in the men who produce the versatile tractor made by Buda, Case, Allis-Chalmers, Caterpillar, John Deere, Minneapolis-Moline, Oliver, and others.

BONNEY FORGE & TOOL WORKS • ALLENTOWN, PENNSYLVANIA

Circle No. 71 on Reader Service Card for more information

NEW *Remite* SEAL ENDS LEAKAGE TROUBLES



Cross-section showing Remite Mechanical Seal.

B & G *UNI-BUILT* **SERIES 1531 CENTRIFUGAL PUMP**

**... a better pump for air-conditioning
and refrigeration installations**

The "REMITE" Mechanical Seal of this pump presents a revolutionary new development in pump design ... eliminates leakage ... assures long, trouble-free life.

A carbon seal ring faces on a "REMITE" floating seat—a new type of material, *so hard it will scratch glass*—wear-proof and corrosion-resistant! This Seal is self-lubricating.

Note the pump shaft ... super-finished high grade steel ... oversized for minimum deflection ... quiet. The impeller is of sound hydraulic design, mechanically balanced, with balance ring and relief holes to reduce thrust. The heavy duty ball-bearing motor is normally furnished as drip-proof, but is also available in splash-proof, totally enclosed and explosion-proof models.

B & G Series 1531 Uni-built Pumps are made with capacities to 1200 GPM, heads to 400 feet.

Send today for catalog No. ET-452, giving complete engineering data on the B & G Series 1531 Uni-built Centrifugal Pump.



BELL & GOSSETT
C O M P A N Y
Dept. C5-45, Morton Grove, Ill.

Canadian Licensee: S. A. Armstrong Ltd., 1400 O'Connor Drive, Toronto, Canada
Circle No. 72 on Reader Service Card for more information

bundle. Baffles are electro tin plated with spacing designed to provide proper velocity with minimum pressure drop through shell. Baffles furnished in accordance with water quantities specified. Rolled steel heads are furnished with multi-pass circuits to permit proper flow of refrigerant and oil through tube bundles. Evaporator available in shell diameters of 8-20 in 2-inch increments and tube bundle lengths of 5-13 feet in 1-foot increments.

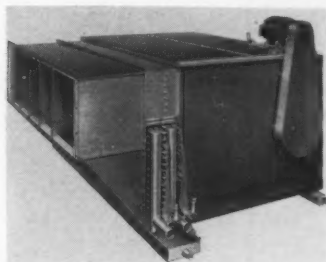
Circle No. 147 on Reader Service Card

Air Conditioners

Product: "Multi-Zone" air conditioners.

Manufacturer: Refrigeration Engineering, Inc., Los Angeles.

Features: Available in eight sizes with capacities up to 24,000 cfm. Unusual features is construction of



damper section. Zone dampers are placed at 45° angle so that ducts may be taken off either horizontally or vertically. Manufacturer says it is simple matter to arrange some zones for horizontal take-off and others for vertical take-off on same unit. Any number of zones may be specified, considering minimum zone width of 5". Diffusing cones on fans insure uniform air distribution over coil and improve coil performance. Conditioner consists of fan housing, coil section and damper section. Each section may be handled separately and assembled on job. Mounting bolts are easily accessible from outside. Unit adaptable for use as a supply unit for double duct system as well as multi-zone unit, by omitting damper section. Units are described in new catalog AC-504 available from the company.

Circle No. 148 on Reader Service Card

**BUY FROM YOUR
REFRIGERATION WHOLESALER**

Remote Water Cooler

Product: Remote-type electric water cooler.

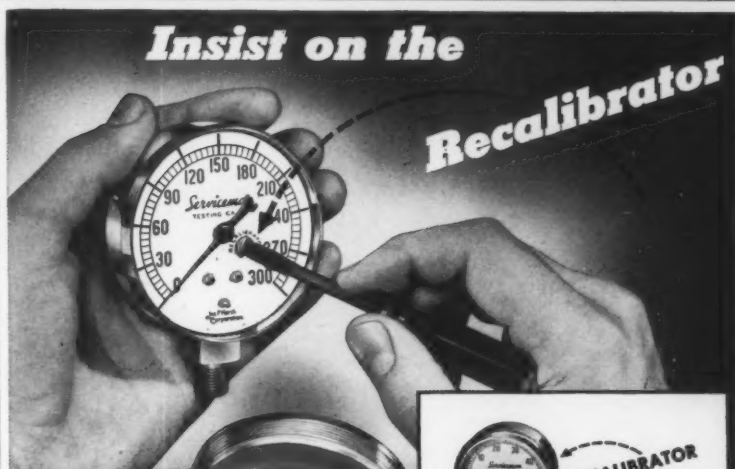
Manufacturer: Westinghouse Electric Corp., Springfield, Mass.

Features: Available in either air- or water-cooled types, for use with wall fountains. Air-cooled model is WAP7A, water-cooled model WWP13. Air-cooled model will supply 12.1 gph of 50 F water where inlet temperature is 70 F and room temperature is 80 F. Water-cooled model will supply 21.2 gph under similar conditions. Water cooling chamber

of both models is of brass with interior surface heavily tin-plated; refrigerant flows through coils of copper pipe. Chamber insulated by granular cork sealed in air-and-moisture-tight enclosure. All water-carrying parts insulated to eliminate sweating. Hermetically sealed refrigeration system with five-year warranty.

Circle No. 149 on Reader Service Card

**BUY FROM YOUR
REFRIGERATION WHOLESALER**



- Vital to Every Testing Instrument

Using a testing gauge that doesn't have a convenient means of keeping it accurate is like using a cutting tool without a handy means of keeping it sharp.

Like good cutting tools Marsh Gauges are "sharper" to begin with, but if you ever knock them out of adjustment you can "sharpen" them up in flash with the twist of a screwdriver.

That's why every true craftsman prefers Marsh testing instruments. When the pointer fails to return to zero just turn the Recalibrator screw until accuracy is restored. And remember: the Recalibrator is the one sound way to "sharpen" a gauge because it gets right down to the source of the error... corrects the relation of the bourdon tube to the movement.

Marsh testing gauges and thermometers are the only testing instruments that have the "Recalibrator". Use these tools that are right and can be kept right.

See your jobber

WRITE FOR BULLETINS

MARSH INSTRUMENT CO.

Sales Affiliate of Jas. P. Marsh Corporation
DEPT. P, SKOKIE, ILL.



Easily removed knurled rings on the new, handsome Marsh testing gauge set gives quick access to the "Recalibrator." Here is the team of thoroughbreds for the serviceman who wants the best. (Dial size, 2 1/2").



The "Recalibrator" is the finishing touch to this finer testing gauge with three extra color differentiated scales for sulphur dioxide, methyl chloride, and Freon. (Size, 2 1/2").



The "Serviceman" thermometer also has the "Recalibrator." Note the 4-scale version of the Serviceman with color-differentiated pressure equivalents.

MARSH

Refrigeration Instruments

Circle No. 73 on Reader Service Card for more information

THE LITTLE THINGS . . .

Continued from page 35

- d. Make written reports of all complaints made by a customer and attach it to the signed work order.
- e. Do not leave any papers, plans drawings, erection instructions, or memoranda on the job. Leave only such instructions as have been prepared for the customer.

f. Be sure Lee Shell name plates have been attached to all of our equipment. This should be done *before*, not *after*, the equipment is erected. Attach name plates unobtrusively with out attracting attention of customer or clerks.

8. Avoid all unnecessary talk with customer, clerks, bystanders and others.

- a. Do not discuss equipment prices or installation costs. Refer any such inquiries to the office.

- b. Do not discuss company policies or personnel with customers.

9. Do these things upon arrival at the job, and while the job is in progress:

- a. Make a good impression on the customer and the public. Remember—to the customer you are the Lee Shell Co.

- b. Proceed with the work in a systematic, orderly manner:
 - plan ahead to keep men busy, to avoid confusion and congestion.
 - press the work vigorously right from the beginning.
 - complete the work at the earliest possible moment.

- c. Act in a high class, workman-like manner that will build good will for you and the Lee Shell Co.:

- avoid loud talking, loud instructions to men, whistling, and other disturbing practices.
- avoid smoking on the job, avoid loitering.

- d. Never take any edible or anything else belonging to the store, and do not permit others of our men or men employed by our sub-contractors to do so.

- e. Keep the premises swept up and clean. Keep rubbish neatly piled or boxed, and remove it at earliest possible moment.

- f. Keep your clothes neat and clean, shave daily. Act respectful and demand respect.

- g. Protect the premises and interests of the customer in every possible way.

- h. Handle all equipment with extreme care so that it will not get damaged in any way:

- do not place material where it can get knocked down, scratched, stepped on, or soiled.

- i. Do not tolerate slipshod or careless work such as hammer marks on wood or metal. Use nail set to set nails, touch up all scratches promptly.

10. Time cards on regular form must be completed and turned in daily.

- a. Time cards must be approved by foreman and turned in daily.

Get rid of these troublemakers!

**SLUDGE-CHIPS
FLUX-RUST
CARBON-WAX-ETC.**

**This NEW BULLETIN
shows you how!
Send for your free copy**

**Gives full details
on the
NEW LINE of
DFN
FILTERS and
STRAINERS**



Most complete line ever developed.

Most efficient filtering ever obtained.

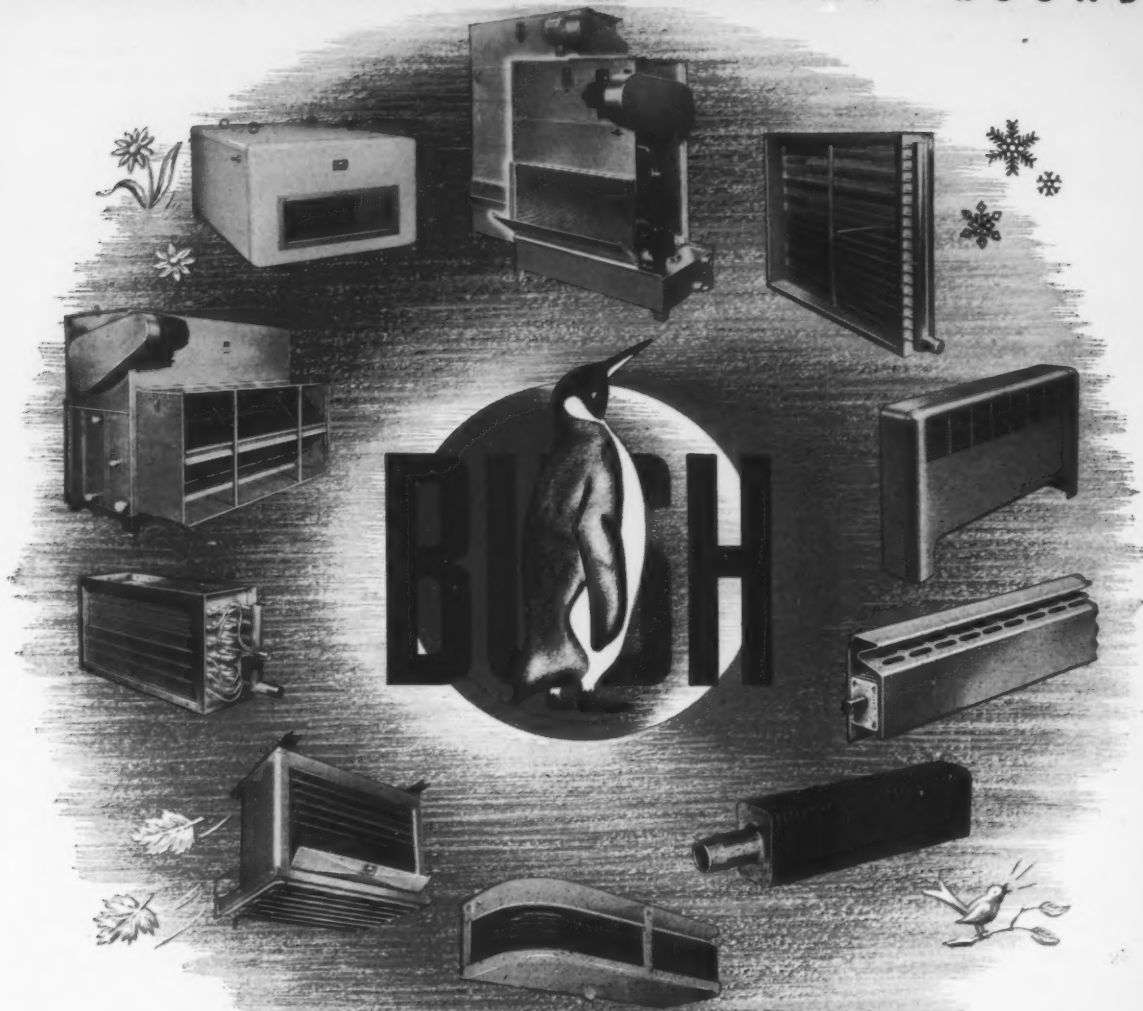
Ask your wholesaler about the new DFN Filters and Strainers. Send for the new, detailed Bulletin 9FS.

McINTIRE CONNECTOR CO., 257 Jefferson St., Newark 5, N. J.



Circle No. 74 on Reader Service Card for more information

LEADING THE WAY THE YEAR 'ROUND



BUSH... THE YEAR 'ROUND LINE

Autumn, winter, spring and summer, there's a Bush unit to handle the heating or cooling requirements for product or comfort. Air Handling units and Comfort Conditioners to take the "dog" out of the summer days; Unit Coolers and Product Coolers, Evaporative Condensers and Cooling Towers for year 'round use; water and steam coils, convectors, finned pipe radiation and baseboard convectors offer a fall and winter line for industrial and domestic heating; condensers, special coils and other heat transfer products all combine to offer the smart businessman a year 'round profit line.

Investigate this opportunity now by contacting the nearest Bush Representative or write the factory direct.

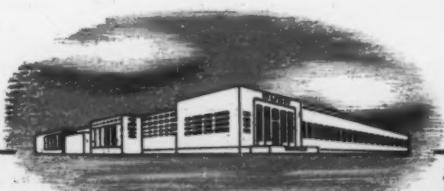
Complete catalogs containing valuable engineering data and specifications available upon request.

Bush Manufacturing Company

WEST HARTFORD 10, CONNECTICUT

Circle No. 75 on Reader Service Card for more information

and AIR CONDITIONING • NOVEMBER, 1952



Since
1907

11. Do these things before leaving the job.

- a. Check over all work to be sure there are no loose ends:
- touch-up all scratches.
 - level up all equipment.
 - clean off all dust.
 - clean up all glass, wood and steel.
 - sweep floor and remove all rubbish.
 - check recent installations in vicinity and report to office.

12. Turn in all papers (Plans, erections, instruction orders, complaints, reports, lists, etc.) Immediately on completion of job. Leave no loose ends: Avoid return trips for yourself or others. (We cannot collect for the job until it is entirely completed and satisfactory to the customer.)

All Service and Installation Men

- leave written itineraries in office when going to job so you can be located at any time.
- keep in touch with the office phone at intervals, especially when it is not possible for office to call you.
- avoid making unnecessary trips—route your stops to save time and mileage.
- check with office there may be a delivery or collection in the vicinity of your call.

Expenses: Man in charge of job is to pay all expenses and report them to office on form provided for that purpose. He will:

- check and collect all time cards.
- pay for allowed meals, hotel bills, and incidentals accrued on job (no meals allowed unless men stay overnight).
- get receipts for all money spent.

HOURS OF WORK: To be same in field as in the shop.

OPEN HOUSE AT CHASE

The first open house in Cleveland's only brass and copper mills was held recently at the plant of Chase Brass & Copper Co., Inc., subsidiary of Kennecott Copper Corp. The plant tour included trips through the Upson Road and Babbitt Road plants where copper and brass are fabricated in the form of sheet, rod and tube.

USAIR NAMES DEALERS IN SOUTH, SOUTHWEST

The appointment of three new franchise dealers in the South and Southwest is announced by United States Air Conditioning Corp., Minneapolis.

Keating Insulation & Contracting Co., of Charleston, S. C., will handle usAIRco self-contained store-type conditioners, packaged central station air conditioning units with built-in evaporative condensers, and RKC water chiller equipment. The new

dealer's territory will include Charleston, Georgetown and Beaufort counties.

Hamilton County and environs, in Tennessee, will be served by Pasco Distributors, Chattanooga, selling store-type conditioners, Refrigerated Kooler-aire assemblies and window-type room air conditioners.

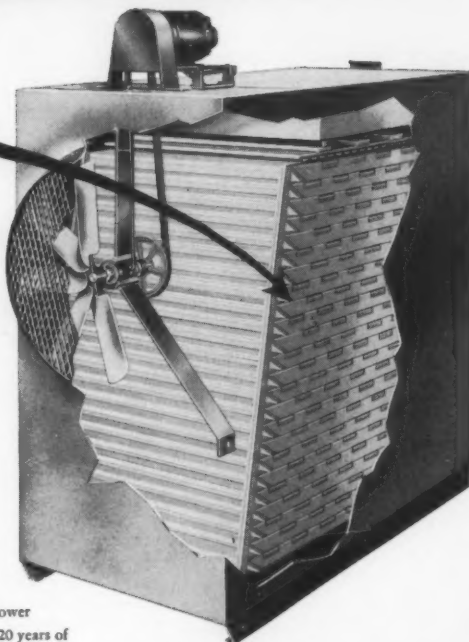
The Aire Engineering Co., Tucson, will market in southern Arizona the complete line of usAIRco equipment with the exception of certain smaller sizes of self-contained air conditioning units.

20-Year Guarantee!

On the Wetted Deck Surface of Koppers Pressure-Treated Wood

HALSTEAD & MITCHELL COOLING TOWERS

3 TONS to
50 TONS
CAPACITIES



Here's the industry's greatest cooling tower value . . . "built like a battleship" for 20 years of foolproof performance. Halstead & Mitchell's pioneering in exclusive use of Koppers pressure-treated wood in the wetted deck surface makes possible the unprecedented 20-year guarantee against rotting, and provides the industry's most effective deterrent against fungi growth. Economical, lastworthy . . . the special H & M design for water distribution eliminates, thru the use of an efficient gravity-type distributing pan, extra pumping head required on spray type towers, also cuts down windage losses due to atomizing of water. The complete assembly is with Everdur bolts . . . disassembly is easy even after years of service. Easily accessible for cleaning through inlet on back of towers in all sizes.

AT LEADING WHOLESALEERS EVERYWHERE

HOUSING

10 gage (3/16") sheet-steel case with 3 coats Bitumastic lining. Electrically welded cabinet.

FAN AND DRIVE

Quiet-operating stainless steel 8-bladed fan, stainless steel shaft, chrome-dipped rust-proofed pulleys. Cast iron bearing supports.

Write for descriptive bulletin



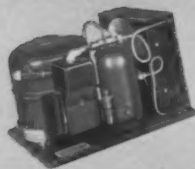
OFFICES: BESSEMER BUILDING • PITTSBURGH 22, PA.

Circle No. 76 on Reader Service Card for more information

NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

Servel SUPERMETIC

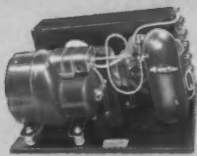
FOR EVERY COMMERCIAL REFRIGERATION AND AIR CONDITIONING NEED...



$\frac{1}{4}$ — $\frac{1}{2}$ — $\frac{1}{2}$ HP MODELS
Air Cooled
Medium or low temperature



$\frac{1}{4}$ HP MODELS
Air Cooled — Medium or Low Temp.
Medium or low temperature



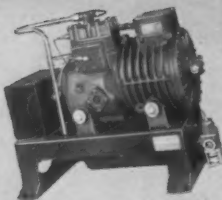
$\frac{3}{4}$ — 1 HP MODELS
Air Cooled
Medium or low temperature



$\frac{1}{2}$ HP MODELS
Water Cooled
Medium or low temperature



1 HP MODELS
Water Cooled
Medium or low temperature



1 — $1\frac{1}{2}$ — 2 HP MODELS
Water Cooled
Medium or low temperature



1 HP MODELS
Water Cooled
Medium or low temperature

Low-cost factory
warranty available
on all current models



Compact Power Units for
High Temperature Applications
 $\frac{1}{2}$ to 5 HP MODELS

WRITE TODAY FOR
NEW CATALOG NO. 53
— Just off the press

Servel

ELECTRIC REFRIGERATION DIVISION
EVANSVILLE 20, INDIANA



**YOU
MAKE A
"CLEAN"
PROFIT**

**...on every sale
of TEXACO
CAPELLA OIL (WAXFREE)**

Texaco Capella Oil (Waxfree) is the new and improved compressor oil that *won't precipitate wax* in systems, even down to minus 100° F. That means clean compressor operation in both the normal and ultra-low temperature ranges — and clean compressors mean clean profits for service men, dealers and distributors alike.

Texaco Capella Oil (Waxfree) is outstanding for low haze and floc temperatures . . . outstanding for purity, stability and resistance to oxidation. It's moisture-free, too — will not react with refrigerants.

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NOVEMBER, 1952 • COMMERCIAL REFRIGERATION

THE PRACTICAL REFRIGERATION APPLICATIONS MANUAL

Readers are invited to submit their problems to this department. Each letter of inquiry will be answered personally by the author. The most interesting one will be published in these columns. All problems should be clearly and completely stated and addressed to: COMMERCIAL REFRIGERATION AND AIR CONDITIONING, Manual Dept., 1240 Ontario St., Cleveland 13, Ohio.

PROBLEM

"I WOULD appreciate it very much if you would answer one question for us. This question concerns a typical reach-in or walk-in refrigerator, using ordinary forced air (finned tubing) type evaporator, and with temperature controlled by a pressure switch at the machine.

"I have been told that a slight shortage of refrigerant in the system will not cause a longer run (or colder box) than if the system had a full charge. Yet, I have found several cases of longer run than should be and colder box than should be (refrigerant flashing slightly in sight glass), and when I added refrigerant enough to stop flashing, the valve would throttle or modulate properly and the unit would shut off without running too long, thereby allowing a warmer (proper) box temperature.

"This is allowing that compressor is okay and all component system parts are also okay. Also that the valve orifice is not oversized.

"Of course I also realize that if the system were very short of refrigerant the unit would be expected to short cycle. What I had in mind was just a slight shortage."

SOLUTION

THEORETICALLY a shortage of refrigerant results in shorter running time and warmer box temperature when operation of the system is controlled by a pressure switch. It is, however, conceivable that a slight shortage of refrigerant might in some instances result in a condition such as you have described.

Each pound of refrigerant in the system has capacity to absorb a given number of Btu's. A system using an oversized blower coil and condensing unit with a slight undercharge of refrigerant might produce the condition under discussion.

The usual procedure in engineering a refrigeration system is to provide a balanced installation with adequate coil and condensing unit to satisfactorily handle the refrigeration load under maximum load conditions, with allowance for a nominal safety factor.

Such an engineered installation with a full or proper refrigerant charge should produce the proper box temperature with minimum operating conditions under light load, and equally satisfactory temperature conditions with some increase in running time under heavy load conditions.

The theory substantiating your position is that although the system is slightly undercharged there is adequate refrigerant to remove the heat from the box. However, this shortage of capacity results in higher suction gas temperature which in turn results in a longer condensing unit operation, and a lower temperature in the evaporator and the fixture.

RECORD COILS EQUIPPED WITH MOTOR PROTECTION

Effective immediately, fan motors on all Record blower coils will have a built-in overload protector which will prevent motor burn outs, it has been announced by Refrigeration Engineering, Inc.

The engineering improvement, incorporated in the units without additional cost, is expected to result in substantial savings to users both from the standpoint of service calls and replacement of burned-out motors.

WATSCO

Pat. Pend.

Strain-O-Kap
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Hard drawn spun copper tube, 60, 80, 120 mesh, with solder fitting.

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Non-porous, all brass shell, 60, 80, 120 mesh. Easy to disassemble and clean.

STRAIN-O-KAP Features TRIPLE STRAINING ACTION



THE STRAINER: Containing 3 monel screens graduated 60, 80, and 120 mesh. Scientifically designed not only to strain but also to break up the turbulent erratic flow of globules of oil that travels along the refrigerant. The action results in a quiet efficient supply of refrigerant and a pressure drop so desirable in capillary systems.

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By Wm. Henry Knowlton

Floor Slab Construction for Perimeter and Radiant Heating

SINCE the advent of "radiant" floor panel heating some years ago it is quite possible more sins have been committed in the interest of this "improved" form of heating than with anything since the pipeless furnace. And with the current trend to "perimeter heating", which also depends upon proper construction of the floor slab for success, there is better than an even chance that these sins will continue to multiply.

The reason for this unhappy state of affairs is that too often the heating contractor has no control over the type of floor construction used in the building he is asked to heat. The National Warm Air Heating Association says, in its Manual No. 4 on "Warm Air Perimeter Heating",

"Proper slab construction is the responsibility of the architect, builder, or owner. But the heating contractor needs to know and understand those requirements of proper slab construction that affect the design, installation and satisfactory operation of a heating system installed in a building having a concrete slab on the ground."

From this it appears that the most the heating contractor can do is to *recommend* good practice, and then hope for the best. So far as possible he should *insist* on proper slab construction.

At the same time, when the air conditioning man becomes aware of improper slab construction, it would take a strong will power indeed to

turn down the job, or perhaps a group of many jobs. Yet the owner should be made aware that improper slab construction will be sure to waste fuel, and affect the overall operation of the system.

In cases where the air conditioning contractor must guarantee performance of the heating system, it is up to him to see that the floor slab is constructed in accordance with his minimum requirements. This is because the slab is an *integral part of the heating system itself*, and therefore affects his eventual responsibility. It becomes imperative, therefore, that specifications for the floor slab construction become a part of the heating and air conditioning contractor's bid, to protect the owner as well as the contractor.

It is not unusual to see snow melted several feet out from the foundation of a building heated by a radiant floor slab. This means that the owner is buying oil, or gas, or perhaps coal, to heat the earth around his home to a point where it will melt snow. This also means that the total capacity of the system is being robbed to a point where the interior may not be comfortable. Such a practice is not only wasteful, but affects the overall operation of the system.

Drainage All Important

It is moisture more than temperature that is the enemy of the building with a heated floor. This is due, of course, to the ability of water to con-

duct heat to the outside of the structure. Thus a basementless building should never be located in a low lying area where the earth is wet, or the ground subject to flooding by surface water.

It has been pointed out that water and damp earth around a heated slab or crawl space cause more unsatisfactory heating installations in basementless buildings than any other factor. For a satisfactory heating installation of this type, the building site must be well drained and the surrounding grade sloped away from the building (see figure 4). The top of the slab should be at least 6 inches from the ground, away from surface moisture.

Perimeter Heating Systems

As shown in Figure 1, the perimeter loop type heating system consists of a continuous duct going all the way around the outside edge of the building, supplied by feeder ducts from a centrally located furnace plenum.

Because of the popularity of this type of system, most warm air heating manufacturers make a "counter-flow" model furnace, in which the warm air is conducted downward instead of upward. This warm air flows through the ducts to the perimeter loop, and thence out the various registers (see figure 3), whenever they may be located.

Because the several ducts are buried in the floor slab (see figure 2),

the slab itself becomes heated, and a fine combination of radiant floor heating and winter air conditioning results. In small structures, cold air is taken into the top of the furnace at one point, usually over a doorway.

Where the duct distribution system is located in a crawl space, the ducts should be designed exactly as in a building having a basement, with at least one outlet feeding the crawl space itself. This assures even distribution of air and a warm floor. It is also possible to use the entire crawl space as a plenum chamber, but this practice is not recommended, except

perhaps in a very small commercial building such as a real estate office or gasoline station.

Register Locations

In the perimeter loop system, warm air registers should be located about 5 inches from the wall. When these are under windows they will serve to "screen" the cold air flowing down over the surface of the window, and still not interfere with drapes. Slanting baseboard registers are especially for this purpose.

Where wall space is at a premium, the warm air may be introduced at the

face of storage bins, or cabinets. Air may also be introduced from the sills of recessed windows.

Whether the concrete floor slab is built for a perimeter heating system described above, or a radiant hot water system with iron or copper pipes embedded in the slab, the construction principles remain exactly the same. In either case three important principles must be followed:

1. Building location must be well drained and dry.
2. Slab edge or crawl space walls must be insulated.
3. Moisture barrier must be in-

Details of Construction for Heating Systems In Floor Slabs

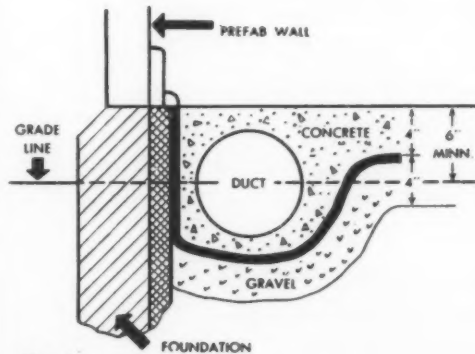


Fig. 2

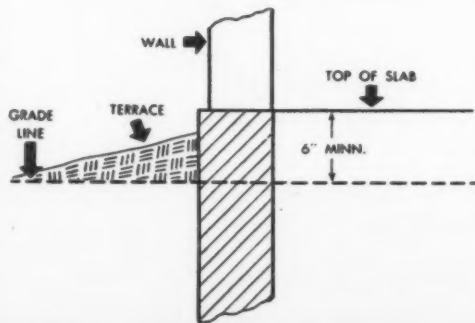


Fig. 4

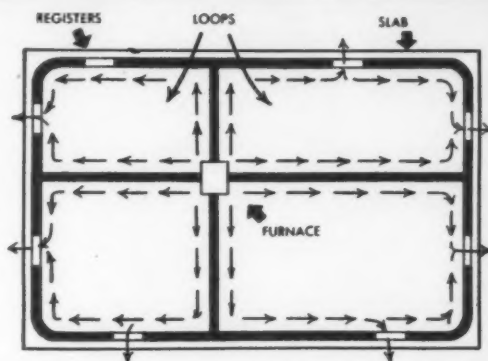


Fig. 1

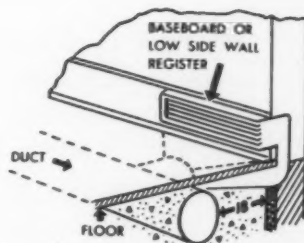


Fig. 3

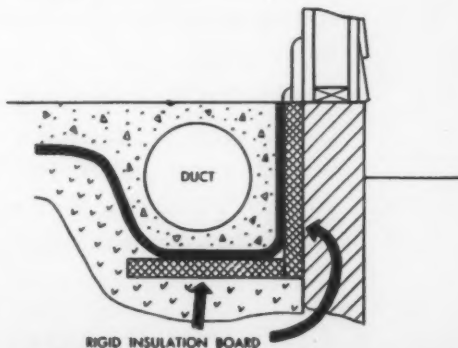


Fig. 5

Clearing The Way



WEIGHTY PRODUCTION PROBLEMS are not easily swept away. Careful calculation by experienced minds is often required before the right type of tubing for a specific job can be determined.

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stalled over a proper coarse fill. Figures 2 and 5 show a cut-away section for proper slab construction together with the relationship of the various elements.

Site Preparation

Prior to the installation of the fill, the site should be leveled and cleared of all foreign objects, such as rocks, stumps, debris, and the like. It is particularly important that all forms of organic material be removed from the site.

The under-slab fill should consist of from 4 to 6 inches of crushed rock or screened gravel, from which the fines have been removed. The purpose in this is to get rid of moisture by proper drainage under the slab. Cinders should never be used, as they contain sulphur that will harm any metal used in a radiant heating system, where the pipes rest directly upon the fill. They also have a tendency to disintegrate into small fines.

Moisture Barrier

A moisture barrier is absolutely essential, and should be the equivalent of a good grade of roll roofing, at least 55 pounds per 108 square feet. All joints must be lapped 4 to 6 inches, and sealed with suitable material. Openings made by water pipes, conduit, and accidental puncture should be sealed in a similar fashion.

Properly installed, the moisture barrier will keep the bottom of the slab dry, prevent water borne concrete from running down into the fill, and provide a smooth surface for the bottom of the slab. Its most important purpose, of course, is to keep moisture in the ground from rising by capillary action to the slab.

When sheet metal ducts are used, the concrete slab should extend all around the ducts. Where vitrified clay pipe is used for ducts the pipes may rest directly upon the moisture barrier.

Currently many experiments are being made with various fireproof materials suitable for duct construction, such as formed concrete, but they are too numerous to mention here.

Insulation

To prevent heat from escaping through the outside walls of the building, these walls should be in-

sulated on the inside with at least two inches of waterproof insulation, as shown in Figure 2. The board should extend downward at least 18 inches. In extremely cold climates it should go down to the frost line.

A superior construction is shown in Figure 5, where the insulation board is placed both vertically and horizontally. Use of both a baseboard and quarter round above the upper edge of the soft insulating material will both protect and conceal it.

After the slab is poured, it should be allowed to cure for at least seven

full days before the heat is turned on. A full 28-day cure is highly recommended. Rapid drying of a green slab of concrete may cause severe cracking which might be blamed on the heating and air conditioning contractor.

Obtain Cooperation

It is readily seen that in the design and installation of a perimeter heating system using warm air, or a radiant floor panel system using hot water, the heating and air conditioning contractor must gain the com-

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plete confidence and cooperation of the architect, owner, and builder. Proper construction of the slab is absolutely essential to the successful and economical operation of the system. Before work is begun all parties concerned should be acquainted with the facts, and the result will be a highly successful installation.

Editor's Note:

The design of perimeter warm air and radiant floor panel systems will be discussed in "The Heating Side" section of forthcoming issues.

IT'S THE LAW! . . .

Continued from page 16

us at the unpaid balance. However, if the merchandise cannot be located you are released from all liability."

The refrigerators were delivered to this purchaser at Hopewell, Miss. The purchaser subsequently moved to a town a few miles distant, located in an adjoining county. When later the finance company sued the dealer on his endorsement of the contract the defense of the dealer was that since the purchaser had "skipped out" and the merchandise had disappeared during the life of the contract, he was

relieved of liability under these terms of this assignment contract.

Holding the dealer liable and the finance company entitled to a recovery the Mississippi court said,

"Considering the clause as a whole it is clear that it has no application where the purchaser has not 'skipped out,' even though as in this case he refuses to tell where the merchandise is and the merchandise cannot be located. The mere showing that the purchaser journeyed the short distance from Hopewell, in Copiah County, to Jackson, in Hinds County, where he was readily and easily located, does not establish the fact that he had 'skipped out' within the contemplation of this clause and is not sufficient to effect the dealer's release from liability."

Douglas v. Refrigeration Discount Corp., 35 So.2d 491, Mississippi

DAMAGES FOR FAILURE TO MAINTAIN TEMPERATURE

IN THE SALE of a walk-in cooler with low temperature facilities, the buyer was assured by the seller that the equipment, installed with sufficient units, would freeze 2,000 pounds of meat at one time. The machine was in two units, one the product of a Minnesota and the other of an Ohio manufacturer, which were assembled and delivered by the dealer.

When 1,200 pounds of meat had spoiled,

the purchaser sued the dealer for damages on the ground that the equipment was not fit to perform the work for which it had been purchased. The dealer in his defense contended that no liability rested on him by virtue of the contract provision which excepted implied warranties.

This sales contract provided, "The warranties and guarantees applicable to the above equipment shall be the standard warranties furnished by the manufacturer thereof and no others. No agreement or understanding, or oral otherwise, which is not plainly written in this contract before signature shall qualify the terms thereof."

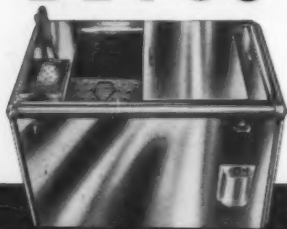
The Missouri appellate court in sustaining a judgment in favor of the purchaser for \$1,000 damages, said,

"The 'above equipment' consisted of two separate units, one made by one manufacturer, the other by another. All that the provision means when applied to the facts here is that the seller assumes no other warranty as to each particular unit except that given by the manufacturer. The implied warranty of fitness was wholly independent of anything contemplated in the express warranty of the manufacturer."

Davies v. Motor Radio Co., 236 S.W.2d 409, Missouri

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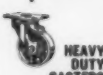
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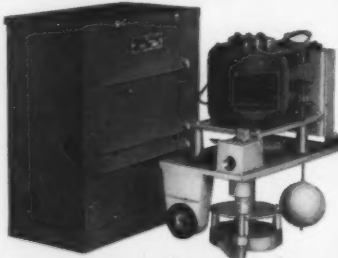
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SILVER BRAZING . . .

Continued from page 45

down both sides and underneath and pull into the joint.

The brazing of a vertical up joint is not difficult if the fit of your joint is good. Of course, it pays to preheat the tubing thoroughly so that it expands tightly into the fitting. When your flux is fluid, touch your alloy to the edge of your joint throwing most of your heat on the fitting to pull the alloy up into the joint.

Avoid overheating the tubing after once starting your actual application of the brazing alloy, as it may flow



back down out of the joint if your heat is not continued on the fitting.

The brazing of "blind joints" is a job often encountered in installation work. We refer here to the type of joint with one side very close to a wall, making it impossible to see just whether the brazing alloy is flowing all around the joint area.

In such cases it is best to carefully preheat the joint and, by bending your rod, touch it on the back side. When it melts and flows around, then you know you are getting silver brazing alloy in the back area of the joint.

Such joints should be inspected with a little hand mirror immediately after they are supposedly complete. If pin holes or gaps are noted, that is the easiest time to supply a little more flux, reheat the joint until the alloy is molten, and then apply more alloy.

Finally, one of the most frequent conditions in repair work is that of taking apart a previously silver brazed joint. In taking apart such joints, always completely flux the

joint area around the end of your fittings so as to avoid burning the brazing alloy when you are trying to loosen it and pull it apart. If such care is taken you can often reuse both the fitting and tubing that has been taken apart.

Clean Old Joint Well

In rebrazing repair work, it is of even greater importance to be sure that the old silver brazed joint has been thoroughly cleaned so as to remove any oxide or dirt before attempting to rebraze.

It is suggested that you definitely avoid trying to use higher flow point phosphor-silver-copper alloys in repair work where the lower flow point alloys have already been used. In repairing joints, try to use an alloy similar to the original silver brazing alloy that was used on the joint. The silver-phosphor-copper alloys generally have a grey appearance in the joint area, whereas the higher silver content silver brazing alloys generally have a brass or golden appearance in the joint area.

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SEE PAGE 17



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THE SERVICE MAN'S DEPARTMENT

HERE'S HOW!

Questions and Answers On Electric Motors

Lately we've had a number of questions concerning electric motors. Since this subject is of importance to refrigeration servicemen, we are giving our answers to three such questions below.

What is the difference between a single phase and a split phase motor?

A split phase motor is one type of a single phase motor. All single phase motors must have some means of starting the motor. A split phase motor has an auxiliary winding to set up a revolving field thus causing rotation.

Can any single phase or split phase motor be improved by adding a capacitor?

As we've said, a split phase motor is one type of single phase motor, and the addition of a capacitor in series with the auxiliary winding will increase its torque or ability to start.

Is there any difference between a condenser and a capacitor?

The names are synonymous and may be used interchangeably. The



WANT TO EARN \$5?

You don't have to be a literary genius to pick up a fast five-spot. All you have to do is jot down some of the shortcuts you've developed in your maintenance or installation work and send them to Here's How Editor, Commercial Refrigeration and Air Conditioning. If the Editor votes "yes" on your contribution, your \$5 will be paid promptly when your maintenance tip is published in the magazine. Let's hear from you!

term condenser was used widely in electricity some years ago, but the term capacitor is steadily replacing it in modern terminology.

Proper Piping Reduces Compressor Failures

Many compressor failures are caused by poorly designed refrigerant piping systems. The number of broken compressor valves and burned out compressors can be reduced if bad piping practices are avoided.

The fundamental rules for guiding installation practice may be summed up as follows:

1. Liquid refrigerant with little or no flash gas should reach the expansion device.
2. Discharge gas must be taken from the compressor to the condenser without trapping out excessive amounts of oil and with a minimum of induced pipe vibration.

3. Vaporized refrigerant must be returned to the compressor in a manner to insure return of entrained oil in a metered measure to avoid injuring or robbing the compressor of oil.
4. Proper control of refrigerant to the cooling coil during both "on" and "off" cycles is really important.
5. A refrigerant compressor is a gas pump and not a liquid pump.

More Ado About Health And Air Conditioning

There has been much discussion, pro and con, about the relationship of air conditioning and health. So much so, in fact, that an understandable confusion has arisen in the

I DO IT THIS WAY

WHILE installing some ammonia valves, I found that the plastic cups pressed in the threads to keep out dirt and moisture were ideal containers in which to mix litharge and glycerine for thread compound. Since they are flexible, any unused compound can be easily broken out simply by squeezing the cup between the fingers and shaking out the crumbled litharge after it has hardened.

Ernest Qualey, Salem, Ore.

Editor's note: This is a good method, and a hollow rubber ball can be cut in half and used for the same purpose.

I DO IT THIS WAY

I HAVE been called in several times by owners of old type refrigerators who complain of loud squeaking noises when the unit is running.

I find that belt squeal is usually the cause of this noise. After some years of service, the sides of the small pulley wear smooth and there is a slight slippage as the belt passes around the small pulley.

The remedy that I've discovered for this slight squeal is to touch both sides of the small pulley with a piece of emery cloth, or a round file, while the motor is running. The fan blades should be removed as a safety precaution. This will permanently eliminate the annoying squeal.

David H. Zentz, Warrentown, Va.

minds of many people engaged in this business as to whether air conditioning is or is not beneficial to human health and well-being, and as to what

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design conditions are generally considered to be most healthful and practical.

For many years it has been standard practice among application engineers to design an air conditioning system to maintain 80 F inside when the outside temperature is 95 F or above. User surveys have indicated that the average person desires a temperature of 80 F or less, regardless of the outside temperature in summer. A rather large percentage of users have expressed a desire for temperatures as low as 75 F.

Reports on some units installed in desert locations where summer temperatures often exceed 120 F show that in each case the user desires, by way of experience, an inside tem-

perature always has to face the problem of simultaneously pleasing a large group of people with regard to temperature. When 98% of the people express themselves as being completely satisfied, it is quite likely that the remaining 2% will be violent in their protest because the condition that they personally desire does not meet the average requirement. Therefore it would seem that the relationship of air conditioning and health is as much a psychological problem as a physiological one.

Grinding Wheel "Don'ts"

Don't handle grinding wheels carelessly. This causes wheel breakage. Remember, grinding wheels are brittle and break easily.

Don't drop or bump wheels against one another or against other objects.

Don't roll grinding wheels as you might roll a hoop. They pick up foreign matter which injures their surface.

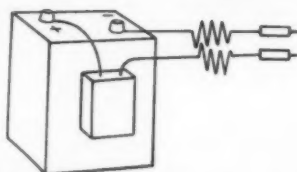
Don't pile heavy objects on top of wheels. Treat them as you would other fine tools.

Don't store grinding wheels in a damp place, or where there is extreme heat or cold.

Don't store thin wheels on their edges. This will cause warping.

Don't store wheels on edge unless you provide some means of preventing them from rolling.

I DO IT THIS WAY



HERE'S an idea that's not new, but is seldom used—and it has proved to be an A-1 circuit tester for my own use. I have a standard lantern battery with a small buzzer taped to it, and two lead wires, as is shown in the illustration.

For a quick, on-the-spot circuit tester, this can't be beat. One of the things I like about it is that there is nothing to plug in, and no light to watch. The sound tells the story.

Ira Melton, Jr., Poplar Bluff, Mo.

perature of 80 F. These people have given favorable testimony with regard to health and comfort.

Tests conducted by the American Society of Heating and Ventilating Engineers in conjunction with the medical college at the University of Illinois indicated that individuals moving from warm rooms to cold rooms, and vice versa, have not experienced any ill effects, medically speaking. One segment of the group under observation was classified as those having heart difficulties, and their response to this change of temperature environment was even less than that of the normally healthy persons.

Of course, the air conditioning in-

LANGSENKAMP MOVES INDIANAPOLIS BRANCH

F. H. Langsenkamp Co.'s Indianapolis branch, formerly located at 124 Kentucky Ave., has been moved to 430 Alabama St. This property, which adjoins the firm's main plant, has a larger display room, with better lighting and loading facilities as well as a private parking lot to take care of 10 cars.

NAMED YORK DEALER

Certified York, Inc., in the Little River section, has been named the first local dealership in the Miami area for Hill-York Corp. The new firm, which will sell and service York air conditioning and ice making equipment, is owned by Christopher W. Swain, Frank Perryman and Richard F. Hollis.

OPPORTUNITIES

(Classified Advertising)

Rates: for "Positions Wanted, \$4.00 minimum, limit 25 words. For all other classifications, \$4.50 minimum for 25 words or under, each additional word 15c; boldface type or all capitals, \$7.50 minimum for 25 words or under, each additional word 20c.

OPPORTUNITIES AVAILABLE

Wanted—Manufacturer's Representative. National manufacturer of a complete line of air conditioning and heating equipment has several lucrative territories open. Write only, giving age, experience, present lines carried and territories covered. Box 11152 Commercial Refrigeration and Air Conditioning.

TRAINING AVAILABLE

Course on sealed unit rebuilding trade secrets disclosing exclusive methods for all operations. \$12.50 or write for details. H. Custer, Box 98, Center Line, Michigan.

SPRAY PAINTING . . .

Continued from page 43

these packaged self-spray paints because of the savings in time made possible on the part of the serviceman and the fact that the paint can be taken to the job rather than bringing the equipment to the shop.

The self-sealing valve and removable spray head available on much of this equipment makes it possible to clean the spray head after each use,

thus preventing clogging and permitting full use of all the paint in the container.

Proper procedure for using self-spray paints is highlighted in the accompanying photos, but here are some additional pointers:

Shake container well before using. If a complete door or panel is to be refinished, be sure to first remove any wax or film and roughen the surface to provide better adhesion of the new enamel.

Do not spray near fire or open flame, and do not puncture or incinerate container.

USAIRCO APPOINTS FOUR NEW SOUTHERN DEALERS

United States Air Conditioning Corp. announces the appointment of four new dealers in Tennessee and South Carolina, handling usAIRco packaged refrigeration equipment.

In Tennessee, Ricker Heating Company, of Oak Ridge, Withrow Plumbing and Tin Shop, of Mount Pleasant, and Locke Heating & Construction Company of Knoxville, have been named authorized dealers. Carolina Heating Co., Inc., of Columbia, South Carolina, will be exclusive dealer in Richland County.

**BUY FROM YOUR
REFRIGERATION WHOLESALE**



When you replace Motor Capacitors.

If you know the motor type—by nameplate, appliance type, etc.—refer to Aerovox comprehensive listings for correct capacitor replacement.

If you can't identify motor or capacitor, use the Aerovox Capacitor Selector for required capacitance value for quick and safe starts.

If you must get motor running immediately, clip on an Aerovox Emergency Capacitor for any required capacitance for quick and safe starts.

If you want to complete the job, get the correct exact-duplicate or universal replacement from your Aerovox supplier.

**Consult your supplier for
latest Aerovox listings.**



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Export: 41 E. 42nd St., New York 17, N. Y.

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103

NO MORE FREEZE-UPS of expansion valves or capillary tubes!

ICE-X works like magic
SERVICE MEN SAY: "ICE-X IS GREAT!"



When ice forms in expansion valves or capillary tubes, ICE-X is a sure remedy . . . ICE-X is non-corrosive—harmless to parts. An ice-eliminator that can't be beat for Freon, Carrene, or Methyl Chloride systems . . . Order from your jobber. If no jobber, order direct.



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when it comes from Harry Alter

Jobbers: Ask for special offer!

The HARRY ALTER CO.

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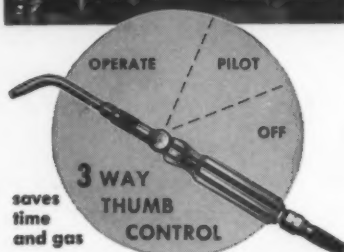
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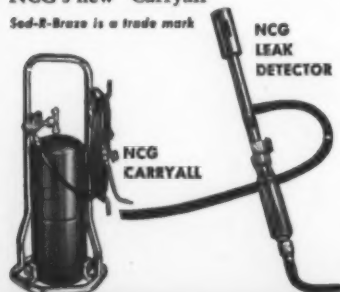
Sod-R-Braze

ACETYLENE-AIR TORCH
with LEAK DETECTOR



With a few twists of the wrist, attach the sensitive NCG Leak Detector to the new Sod-R-Braze torch handle and you're ready to locate refrigerant leaks with pinpoint accuracy. With the same ease, unscrew the Detector, attach a tip and you've got a soldering and brazing torch that beats any you ever used. Outfit, including "NB" cylinder with 40 cu. ft. of high-heat acetylene gas, is easily portable, particularly so with NCG's new "Carryall"

Sod-R-Braze is a trade mark



NCG®

NATIONAL CYLINDER GAS COMPANY
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SEE FOR YOURSELF

why  filters, driers remove impurities as small as 5 microns

Silica gel used in TRAP-DRI takes up 12 to 16 per cent of its weight in water — definitely more capacity than other commercial drying agents.

The honeycomb cotton filter tube is particularly effective because it operates on the principle of depth filtration.



The silica gel acts instantly and is not affected by the oil circulated in the system. It does not give off dust or powder.

A-P filter element is as effective as a 900 mesh strainer in the removal of foreign material, yet there is no appreciable pressure drop.



- TRAP-IT is available in six sizes. Capacities 1 to 4 tons.
- TRAP-DRI is available in five sizes; capacities up to 1 ton.

YES, both the A-P TRAP-IT and the TRAP-DRI actually remove particles of dirt, scale, sludge and other foreign matter as small as 5 microns (approximately .00019 in.) — and do it faster and more completely than any other filter or drier.

The unique honeycomb "depth filtration" filter element, built in both the TRAP-IT and the TRAP-DRI, provides this 100% protection for refrigeration and air conditioning systems. Equal to 900 mesh screen, this efficient element permits a wide range of fluids and flow rates to be handled with no measurable pressure drop. The element will not swell, nor will it shrink or break. Never gets hard or brittle. Does not channel or get soft. Does not release impurities into discharge flow to impair the system.

On the TRAP-DRI, a large charge of silica gel is also used to remove all trace of moisture. This drying agent absorbs 12 to 16% of its weight in moisture — more than any other type.

Protect your service and profits. Write today for Bulletin R-19 and get the full story.



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